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The Toxic States Seen in Urology*

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The purpose of this paper is to list the various toxic states which occur in patients suffering from damage to the urinary tract and to give as nearly as possible the diagnostic criteria by which they may be identified. I shall discuss them as follows:

Renal—

1. Uremia
2. Acidosis
3. Encephalopathy
4. Dehydration
5. Edema

Cardiovascular—

6. Shock
7. Hemorrhage
8. Anemia
9. Myocarditis

Gastro-Intestinal—

10. Starvation
11. Alkalosis
12. Hepatic Insufficiency

Unclassified—

1. Sepsis
2. Cachexia

Taking up these subjects in the order of their listing, uremia naturally appeals to us as being the one of major importance. Its cause is renal failure, which may be due to back pressure from any cause or to parenchymal damage. Parenchymal damage in turn is caused by three main agencies:

a. Defective blood supply
b. Infection
c. Toxins of any kind

This subject is well known to all of you, and I will waste little time upon it. It might be interesting to r e c a l l that the mechanism of the production of uremic symptoms has been fairly well worked out by Becher and other biological chemists, being about as follows:

The end products of protein metabolism in the intestinal tract give rise to aromatic substances such as phenol, p-kresol, thyrosin, tryptophane or indican. These are absorbed into the blood stream where they are detoxified by the l i v e r adding sulphuric or glukuronic acid and eventually a p p e a r in the urine as phenolsulphuric acid or indoxylsulphuric acid, these latter two being relatively harmless compounds. If the kidney cannot eliminate these substances or if the liver cannot detoxify them, they accumulate in the blood. When they accumulate in the blood in large enough amounts, they break over into the spinal fluid. Up to that time they give rise to no symptoms but when they appear in the spinal fluid, the symptoms of uremia begin. Babies and Torok have shown that the Xanthoproteic test is positive in the blood stream long before it is in the spinal fluid; but that when it does appear there, uremia invariably begins. On the other hand, the Xanthoproteic test is never positive in the

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spinal fluid unless uremic symptoms exist. The symptoms are oliguria with a urine of low specific gravity, which eventually leads to the retention of nitrogenous products in the blood. Following this there may be pruritis, delirium, coma, muscular twitching, convulsions, hiccoughs, reflexes lively or normal, subnormal temperature, diarrhea or blood stools, a yellowish tint to the skin with occasional deposits of white urea crystals on the skin, and an increase in the amount of nitrogenous substances in the blood. The supreme laboratory test which reveals the presence of impending uremia is high blood chemistry such as high NPN, blood urea, or creatine. The final and absolute test of uremia is a positive Xanthoproteic test in the spinal fluid.

The treatment of uremia consists of improving drainage from the urinary tract, not only from the bladder but from the kidneys themselves. I have saved the life of more than one moribund prostate case by getting a urethral catheter up to the kidney. Besides urinary drainage, colonic lavage, lumbar puncture, blood transfusion, and intravenous fluids are all measures of importance which are well known.

Another toxic condition which is sometimes confused with uremia is acidosis. In fact, it often accompanies uremia and is responsible at times for more symptoms than the actual uremia. It is seen in various conditions such as starvation or diabetes, asphyxiation, ketosis, severe fevers (caused by decomposition of proteins), and nephritis (lack of excretion of the phosphates).

The symptoms of acidosis are three in number:

1. Acid urine, which remains persistently so regardless of administration of large amounts of alkali.
2. Air hunger.
3. Coma.

Some years ago a test was devised known as Sellard's Test, in which a patient was given five grams of sodium bicarbonate every three hours until his urine became alkaline. The urine was boiled each time before testing. On the basis of this test a tolerance of 20 to 30 grams of sodium bicarbonate indicated a moderate acidosis, and 75 to 100 grams indicated a severe acidosis. This test really is of very slight practical value except where laboratories cannot do a CO2 combining power test. The modern laboratory is able to do this test, in which a figure of 60 indicates a normal reaction of the blood whereas a figure of 50 or less indicates acidosis, 30 being severe.

The treatment of acidosis is quite simple. In mild cases intravenous glucose will suffice. In severe cases of coma or impending coma, Hartman's solution (Sodium R-Lactate diluted to isotonicity) is given until the CO2 combining power reaches the normal figure of 60.

The third toxic syndrome to be mentioned is encephalopathy, whose classic form resembles epilepsy and consists of a prodrome followed by clonic and tonic convulsions with coma continuing after the convulsions. In toxemias of pregnancy we call it eclampsia. During the prodromal period there may be sensory phenomena such as a dead feeling in the right hand, a bad smell, pallor of the skin, increased blood pressure, decreased urinary volume, or paroxysmal dypsnea. Lumbar puncture at this time will as a rule show increased cerebral pressure. The eye grounds will occasionally show papilledema; vomiting is common; blindness may occur in both eyes. The onset is usually sudden but may be gradual. Mental changes may occur, especially delirium. Such attacks may occur with no change in kidney function. Blood chemistry may reveal no retention of the urinary constituents, all findings being normal. As a rule, blood pressure is quite high. It may occur in diffuse glomerulonephritis, pregnancy, or lead poisoning. It is rarely seen in prostatic cases though I have seen it in two that I now recall. At necropsy the brain shows only anemia and sometimes edema.

The treatment is as follows:

1. Venesection. Four or five hundred ccs. of blood may be removed from an adult and proportionate amounts from children. The result is often striking.

2. Lumbar puncture and dehydration is very valuable and on occasions spectacu-

lar. When the fluid is found under pressure, it should be removed slowly.

3. Intravenous administration of 200 ccs. of one per cent magnesium sulphate may be found to lower the blood pressure and act as a diuretic. Along with any or all of these treatments, sedation is the rule.

4. Fluids without salt.

5. Better kidney drainage. This is based upon the work which I have done in toxemias of pregnancy, in which eclampsia is invariably relieved when the pelvis of each kidney is drained by urethral catheters. The stoppage of convulsions by this procedure is spectacular and has been described by me in papers which I have written on toxemias of pregnancy.

The next state to be mentioned is dehydration. It is particularly important in the treatment of prostatism and many of these patients go without sufficient water for days, even in a hospital. It should be remembered that the normal output of water consists of the following:

Feces	200 ccs.
Lungs	300 ccs.
Insensible evaporation	1,200 ccs.
Total	1,700 ccs.
Add 1,500 ccs. of Urine	1,500 ccs.
Total	3,200 ccs.

This is assuming that the urine has a normal specific gravity and can carry away 30 to 35 grams of solids.

This 3,200 ccs. is normally replaced by the following:

Water of oxidation from food	200 ccs.
Water drunk as such	3,000 ccs.
Total	3,200 ccs.

If we calculate how much water 3,000 ccs. is, it may be enlightening to consider that if we drank one glass of water per hour from 7 a.m. to 10 p.m., we would drink 15 glasses. Assuming that we take as much as six ounces in each glass, we have still only drunk 90 ounces or 2,700 ccs. of water, leaving us 300 ccs. short. The only reason why healthy people are not chronically dehydrated is that we do not evaporate quite as much as is herein listed although a sick man might lose that much or more. Also an inactive person will in many instances not pass out a total of 1,500 ccs. of urine. If the specific gravity of the urine is 1,010, the patient must excrete 3,500 ccs. of urine to carry off 35 grams of waste; and when we consider that the average urological patient is excreting a urine of low specific gravity, we must realize that his total urinary output should be greater than 1,500 ccs. This calls for a greatly increased intake of water to balance his increased output. If in addition to having urine of low specific gravity the patient does not eat, he will miss the water of oxidation which he normally takes in with food, thus adding another 100 ccs. or more to his required amount. If he is also septic, he is forced to excrete and burn more tissue, which raises the total amount of metabolic end products he must excrete, hence he will require another 500 to 1,000 ccs. of urine to carry it off, making a necessary increase of 3,000 to 3,500 ccs. above the normal 1,500 ccs.

By considering these facts, we may calculate and find what the patient should have. If aseptic or with poorly functioning kidneys, he will need a fixed output of 1,700 ccs. plus 3,500 to 4,000 ccs. of urine, making a total of 5,200 to 5,700 ccs. output. Against this we may assume that he will oxidize enough water out of his ingested food to account for 100 ccs., leaving a net of 5,100 to 5,600 ccs. to be replaced through the mouth, skin, or veins.

On the basis of these figures, I fancy that most of us are guilty of allowing our patients to become dehydrated.

Just here I wish to say a word about salt. Water will not remain in the tissues unless held by salt, hence we may give all this fluid and still have a patient dehydrated. If we give distilled or tap water, it pours right through, taking along a part of the chlorides that are already in the tissues. Since the blood remains tonic with a fixed chloride content, the water of the tissues will move into it by osmosis, thus further dehydrating the tissues but leaving them isotonic. This will go on indefinitely unless salt is ingested in order to replace that lost in the urine and in perspiration. For this reason corporations give salt to their men in the summer to prevent them from greater fatigue due to dehydration. Also it should be remembered that hypertonic salt solutions pull

water from the tissues in order to dilute salt for excretion through the glomeruli, hence both hypotonic and hypertonic solutions tend to dehydrate the tissues regardless of how much water is given. Therefore, for dehydration give only isotonic salt solution or drugs in this solution. Five per cent glucose is isotonic on administration but the glucose burns up into CO2 and water, leaving a hypotonic solution which will dehydrate the tissues. It should, therefore, in dehydration be given in isotonic salt. If on the other hand diuresis is desired, use glucose in distilled water or use five per cent salt solution which is hypertonic.

The symptoms of dehydration are dry tongue, shrunken lips, sunken eyeballs, and loss of skin elasticity. The only laboratory test of any value consists of a rise of the total red count and hemoglobin in the absence of anemia or polycythemia. It should be remembered that hemorrhage, on the other hand, would cause a lowering of the count so that if we have a dehydrated patient who is suffering from hemorrhage, the blood count will be of little or no value in diagnosis.

The treatment of dehydration is to replace the fluids by isotonic solution, not all at once but about 3,500 ccs. per day plus six per cent of the body weight (Standard). This 3,500 ccs. represents 2,000 ccs. for insensible loss plus 1,500 ccs. for urine. All intravenous fluids should be given at the rate of about 300 to 400 per hour, even slower than this in the aged and in those who are suffering from myocardial damage.

Edema is of three main types: first, that due to plasma protein loss; second, from salt retention; third, from capillary paralysis. The first type is seen in persistent albuminuria, hemorrhage, or in primary anemia from any cause. It causes a swelling of the tissues due to osmotic attraction of the tissues for thinned out blood serum. The only laboratory test of value in this condition is a blood albumin determination, which is rarely done owing to the technique being somewhat difficult. Normal plasmaprotein is 6.3 grams per cent in women and 8 grams per cent in men. This will increase with the loss of water into the tissues. This test is hardly necessary, however, because edema due to other conditions can clinically be ruled out.

The treatment consists of transfusion in order to increase the amount of protein in blood plasma. If this is not possible, six per cent acacia solution in normal saline should be given, 300 to 500 ccs. at a time. An eastern surgeon has recently recommended the use of ascitic fluids to replace protein loss in blood plasma. Possibly this method will soon be worked out so as to be of great practical value.

The second type of edema due to salt retention is caused by the failure of kidneys to excrete sodium chloride, which is retained and in turn holds water with it. This is seen especially in arteriosclerotic kidneys where infusions are given. The treatment consists of leaving salt out of the diet, giving intravenously five per cent glucose in distilled water or 50 per cent glucose, 50 ccs. at a time.

The third type of edema is that usually seen in terminal condition and is caused by a capillary paralysis due to anoxia seen in prolonged shock or very debilitated states. All internes will recall that when patients are extremely low and going downhill, there comes a time when veins cannot be found due to slight swelling of the skin. This is the type referred to under this heading. The best treatment consists of transfusion, which takes oxygen to the capillaries and which likewise draws fluids from the tissues back into the blood stream by osmosis.

While discussing toxic conditions, I must mention circulatory disturbances. Of these there are four general kinds

1. Shock.
2. Hemorrhage.
3. Anemia.
4. Myocarditis.

Shock and hemorrhage are sometimes confused in postoperative states because their symptoms are quite similar, consisting of low blood pressure, rapid pulse, air hunger, and a pale color. It should be remembered, however, that in shock there is rapid loss of fluid into the tissues whereas in hemorrhage the opposite occurs; that is, there is a rapid loss of plasma and red cells due to the bleeding. This fact brings

about a normal or high blood count in a case of shock whereas in hemorrhage the red count would be low. The treatment for these two conditions is the same, consisting of transfusion, heat, and fluids. In shock, transfusion tends to bring fluids back from the tissues into the blood stream by raising the osmotic tension of the fluids circulating in the vascular system. In hemorrhage the blood is simply replaced.

Anemia results from a condition which destroys the blood cells or which causes their loss over a long period of time. This is easily determined by a blood count. The clinical symptoms consist of paleness of the patient's skin and mucous membranes, and in aggravated cases a slight edema of the tissues.

In myocarditis it is unnecessary to point out that the pulse will be weak or irregular. Sometimes there will be edema of the feet and dyspnea, blood pressure may drop low from a previous high and sometimes the heart dilates. The proper remedy for this is caffeine for quick stimulation, digitalis to tolerance, glucose intravenously, and the use of other stimulants such as may appeal to the fancy of the attending physician.

Even the gastro-intestinal system does not escape when we consider the toxic states of urinary disease. Many times the patient will come in suffering from muscular weakness, low or normal blood sugar, acetone in the urine, and with a history of poor appetite and little food for weeks past. In the absence of sepsis, dehydration, uremia, circulatory failure or any of the previously mentioned conditions, we are justified in considering this patient to be suffering from starvation, the proper remedy for which is to give him glucose intravenously until he builds up to the point where he can take food and digest it.

Another condition which is sometimes seen without being recognized is alkalosis. In severe vomiting, particularly in pregnancy or uremia, the patient loses enough chlorides that he or she develops a state of alkalosis. This is also seen in excessive breathing while at rest, and some of our uremic cases suffer from this. Exposure to high temperature, pyloric or high intestinal obstruction will also give rise to alkalosis. The symptoms are dehydration, persistent vomiting or tetanic contraction of the muscles, particularly of the hands and feet. If alkalosis continues long enough, it occasionally ends as a uremia, the reason for which is not clear. The one definite test which establishes alkalosis is the CO_2 combining power in which a normal figure is 60, 50 or less indicating acidosis, and 70 or more indicating alkalosis. The treatment is to give ammonium chloride or calcium chloride until the urine becomes acid.

The most important toxic condition arising in the gastro-intestinal symptom is hepatic insufficiency. It is seen in toxemia of pregnancy, nephritis, and in certain prostatic cases. It is well, therefore, to cover the salient points in this paper. The liver has the following principal functions:

1. It regulates blood sugar (glycogen mechanism).
2. It de-amidizes amino acids.
3. It synthesizes urea.
4. It helps destroy uric acid in metabolism.
5. It excretes bile constituents.
6. It removes micro-organisms from circulation and excretes them through bile.
7. It removes particulate matter and colloidal material by phagocytosis.
8. It protects body from anaphylactic reactions of foreign proteins.
9. It detoxifies certain poisons—chloroform, benzoic acid, strychnine, phenol. It does this detoxifying at the expense of its own tissues, hence it is a question whether hepatic cirrhosis, hepatitis, or the toxemias of pregnancy may not sometimes be a result of repeated attacks of toxicity. The liver regenerates rapidly after injury, after chloroform poisoning, and after surgical removal of any part of its lobes. Seventy per cent of the organ may be taken and will regenerate in a few weeks. It is interesting to note that the liver will perform adequately all its functions even though markedly disabled by disease. Its functions are sometimes damaged selectively as when the excretory functions are damaged yet carbohydrate metabolism goes on.

The symptoms of disturbed function of the liver consist primarily of jaundice, of which there are three main types. First, obstructive, which indicates a blockage of the biliary passages. The bile is reabsorbed into the blood stream, giving rise to jaundice. A good example of this is carcinoma of the head of the pancreas, which blocks the common bile duct. Second, hemolytic jaundice, wherein due to blood destruction, there is too much bilirubin in the blood, thus giving rise to jaundice. This is seen in anemias, blood dyscrasias, large hemorrhages in the thoracic cavity, etc. The third type of jaundice is that due to intrahepatic damage by toxins or infections. In this there is an injury to the parenchyma of the liver, possibly obstructing its discharge of bile high up before it enters the duct. To this class belongs the jaundice seen in uremia or renal sepsis. Babies and Torok think that we can assume with correctness that the accumulated t o x i c metabolic products in uremia lead to a disturbance of the liver function, whereby the severity of the clinical picture is at t i m e s definitely made worse in addition to the already bad function of the kidneys. In some cases they think the disturbance of liver function can dominate the picture. McKay has reported three cases with severe liver complications following the removal of ureteral stone by operative cystoscopy. He states that the patients were desperately sick and that he has seen other cases of the kind. The disease came on about a week or ten days following removal of the stone, and he says that the laboratory tests gave definite indications of the obstructive type of jaundice. It was his impression, however, that the condition was a cholemia, using this term to mean an overloading of the blood by reabsorption of performed biliary constituents. In his experience the condition followed urinary sepsis such as chills and fever with no laboratory evidence of blood stream infection. I have seen a mild jaundice follow urethral chill and have seen it on more than one occasion in patients who were suffering from severe toxemia due to prostatic obstruction. I have also seen cases of severe pyelitis of pregnancy in which the patient was markedly jaundiced, but the jaundice disappeared after proper drainage of the kidneys had been instituted. I have seen a similar mild jaundice in a woman who was suffering from total anuria as a result of accidental injection of an irritating chemical into the pelvis of the kidney. It seems there is no doubt that liver cells are definitely damaged by the accumulated toxic products arising from a state of uremia or urosepsis, and the only remedy consists of relieving the primary condition.

Finally may be mentioned two unclassified toxic states which are quite common. One of these is s e p s i s, the symptoms of which are elevation of the leukocyte count, fever, chills, pyuria, delirium, and sometimes positive blood culture. The treatment consists of tonic and supportive treatment, drainage of abscesses where feasible, and in selected cases the use of drugs such as intravenous mercurochrome, sulfanilamide, or vaccines. I have recently had a case of renal abscess in a polycystic kidney. I could not remove the kidney because the opposite side was also polycystic. I drained a large abscess but the patient remained septic for a period of two months, during which time I saturated her with sulfanilamide and gave her intravenous injections of one per cent mercurochrome every other day until she made an ultimate recovery and is today well. I recently saw a ten-year-old girl who had been operated upon by another surgeon for a perirenal abscess and who drained for three or four weeks, then stopped draining but continued to run chills and high fever. A diagnosis of renal carbuncle was made, and I was c a l l e d in consultation. Owing to the weakness of the patient and the danger of starting a possible septicemia, I preferred to take the conservative course and began giving the child intravenous mercurochrome. She showed an immediate improvement, recovering completely on no other treatment. These and other cases have convinced me that sepsis can be handled conservatively in m a n y cases with less risk than would be produced by additional surgery.

Cachexia can be produced by any one of many things, such as cancer, tuberculosis or syphilis. In hopeless cachexia where the condition cannot be remedied by urinary drainage, tonic treatment or upbuilding foods, it has been my habit to

give the patient intravenously 10 ccs. of one to 500 dilute hydrochloric acid every second day. I have found it to be of considerable value in relieving the patient's cachexia and general weakness. It makes him feel better and is something to do. I first used it in a case of carcinoma of the uterus a few years ago. X-ray treatment had been given to the limit of tolerance and the vagina and rectum were simply a cloaca of sloughing material, the patient bedfast, and in a terrible state. Intravenous hydrochloric acid brought about a magic change. Her appetite immediately picked up, her color improved, and best of all the sloughing area cleaned up. She thought she was getting well. I knew she was not but preferred to leave her thinking so because up to the day of her death she felt good and even got out of bed and began to move around the house. She finally died of intestinal obstruction due to progressive infiltration by the malignancy, but the case taught me that sometimes very simple drugs are valuable. I have used this treatment in malignancies of the bladder, not once but several times, helping these poor people into a better feeling, less nausea and weakness, more spirit and courage in eating, and consider it to be very valuable as a palliative remedy in hopeless cases.

SUMMARY

In this paper I have attempted to outline the various conditions which produce a state of low vitality in a patient who may be suffering from serious urinary tract disease. Many of these conditions are susceptible of considerable relief if they are definitely diagnosed. The remedies to be applied are quite different in each condition, and it is of great importance that the attending surgeon be thoroughly cognizant of each state and with the diagnostic tests by which it may be established. This knowledge will give a much more accurate prognosis and will in many cases assist the patient to a quicker recovery.

Gall Bladder Surgery*

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Some time ago I received an article from the Wesley Hospital in Chicago, a review of gall bladder surgery in that institution, calling particular attention to the evolution of surgery of the gall bladder. It was particularly interesting to me because it covered about the same time that I have had an opportunity to observe this type of surgery.

Thirty years ago most gall bladders were drained, and the article I have referred to, describes how an attempt was made at that time to suture the gall bladder to the parietal peritoneum and then to pack the upper abdomen full of gauze drainage. I can remember very well when the padded drainage tube was first used and what an improvement it seemed to be, since by the use of such a tube the gall bladder could be closed around the tube so as to probably prevent leakage when the gall bladder was dropped back into the peritoneal cavity, and some of the other drainage could be dispensed with. I can also remember the arguments for cholecystotomy and for cholecystectomy, and I can remember hearing one of the great surgeons in Chicago state that even if the gall bladder had to come out, he thought it much safer to drain it first and remove it later, and that the death rate from the primary removal of the gall bladder was at least 15 per cent. Today, diseased gall bladders are mostly removed, unless there is some definite reason for not doing so, such as the condition

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of the patient; the difficulty of the surgical procedure due to the condition in the operative area; obstructions in the common bile duct, which cannot be relieved, in which case the gall bladder may be utilized as a duct by anastomosing it into the duodenum or into the stomach, and certain cases of empyema of the gall bladder.

I had hoped to be able to report a thousand cases and think probably I should be able to report that many, but farther back than about 15 years our records are not available, or are of such character as not to admit of analysis.

The disease is very common, particularly among women, and I think, especially common among women who have had children, and more common after the age of 35 or 40. The youngest one in this series was a girl 16, and the oldest, a man, 88.

The symptoms are very variable, depending upon whether there are stones, or not; whether there is infection present, or not; whether the gall bladder alone is involved; or whether the liver, pancreas, or bile ducts are involved, and whether or not there is obstruction, and where. The most common symptom is that of indigestion. If a woman, 40 years old, or thereabouts, who has had children, complains of indigestion or discomfort in the upper abdomen, gas, belching, etc., it is quite likely that she has trouble about her gall bladder. The ordinary case, after a little study, is not difficult to diagnose. A case with small stones, who passes one occasionally, gives a different picture—severe attacks of colic, often followed by some jaundice, and perhaps no symptoms between attacks other than a vague indigestion. Cases with obstruction of the common duct, due to stone or otherwise, give a different picture entirely, but they usually have a suggestive history, often over a long period of time. Cases with obstruction of the cystic duct give another picture, and if this is complicated by secondary infection of the gall bladder, still another one. These cases with infection throughout the biliary tree are different again. In some of them the symptoms are more general than local. Some few cases have very vague symptoms, or no symptoms pointing to the gall bladder, as for instance, one case who complained of severe pain under the shoulder, never in the epigastrium, no dyspepsia, just the pain under the shoulder. The diagnosis in this case was made by elimination of other possible causes of the pain and by radiographs of the gall bladder. Another case, with an intractable diarrhea of several weeks duration was promptly relieved by removal of the gall bladder. We had a recent case in which the predominating symptom was a tachycardia, who had had a pulse of between 180 and 200 most of the time for three months, which nothing relieved. His heart was apparently normal. He had some vague history suggestive of gall bladder disease. There was tenderness in the epigastrium, and radiographically, he had a diseased gall bladder. He was in the hospital a long time under observation. Removal of the gall bladder was followed by a prompt cessation of the tachycardia, and he has not had any recurrence, since.

Radiography of the gall bladder, in a case where the diagnosis is at all obscure, is of very great value. Sometimes stones show. Usually not. Sometimes, when the gall bladder visualizes fairly well, they will produce a reverse shadow; but, generally speaking, if the patient retains the dye and the gall bladder is not visible in the films, it proves to be diseased. Also, if the gall bladder visualizes fairly well but empties very slowly after taking the fat meal, it usually proves to be diseased. On the other hand, a gall bladder, which fills well and empties promptly, should be considered as not causing trouble, unless there is a great deal of evidence to the contrary.

There is, of course, a great deal of argument about the treatment of these people with diseased gall bladders. There are various diets and drugs, and drainage by stimulation with the duodenal tube advocated. I think that some of these things possibly help some of them. I don't know whether they do or not. Most people with diseased gall bladders have periods—sometimes long periods—during which they are not bothered very much. Possibly the patient and the doctor are a little prone to think the medication has benefited the patient, when he has really just been having one of his intervals between attacks. We know that many people go through life

with a diseased gall bladder, or with stones, and live to a good old age. We also know that too many of them go to the surgeon when they are old and in such a condition that something has to be done for them, with a damaged liver, a pancreatitis, a nephritis, and perhaps a chronic myocarditis. I think gall bladder disease is very conducive to all of these conditions. However, there cannot be any particular argument between the surgeon and the internist about gall bladder disease, because the case that comes to the surgeon has almost always been elsewhere. She has been dieted and has been given bile salts and various other drugs, usually for a long period of time, and when she does come to the hospital she is suffering either from a very acute attack or has had trouble so long that she had become disgusted with it. It takes a good deal of discomfort and time to get the patient in this frame of mind, however. It is not unusual to see cases who have had trouble any place from 15 to 30 years. The intermittency of the trouble encourages the patient to procrastinate in the hope that maybe this spell will be the last one. You can be very sure that the individual with the diseased gall bladder, with some exceptions, of course, is going to go to some doctor, or maybe several of them, in hopes of curing the condition before he contemplates surgery, and that a considerable per cent are going to be poor risks because of age, or conditions secondary to the diseased gall bladder.

This report is based on 771 private cases.

TABLES

Number of cases in this report 771
Men—188 or 24.4%
Women—583 or 75.6%
Almost exactly 1 man to 4 women.

AGES

None in First Decade
Youngest—16 Oldest—88

Age	Men	Women
10-20	3	15
20-30	23	101
30-40	41	164
40-50	51	143
50-60	43	102
60-70	20	47
70-80	6	11
80 plus	1	0

TYPE OF OPERATION

	Men	Women	Total
Gall bladder removed	129	405	534
Gall bladder drained	42	125	167
Anastomosis between gall bladder and stomach or between gall bladder and duodenum	17	53	70
Duct drainage where gall bladder was removed	26	89	115

Number cases having other surgery—509

	Men	Women	Total
Stomach	29	18	47
Pelvic	—	81	81
Appendectomy	92	271	363
Herniotomy	4	14	18

DEFINITE COMPLICATING FACTORS

	Men	Women	Total	%
Stones	56	278	334	43.
Duct stones	4	33	37	—
(% of those having stones)				11.
Ruptured gall bladder	9	20	29	2.6
Gangrenous gall bladder	6	4	10	1.3
Empyema of gall bladder	39	69	108	14.
Total of those which ruptured, would have ruptured, or were apt to rupture, 138 cases or				18.
Definite liver pathology	63	264	327	42.
Definite pancreatic pathology	21	72	93	12.
Carcinoma	4	9	13	1.7
Gastric or duodenal ulcer	29	27	56	7.4
Previous drainage	4	22	26	3.3
Jaundice	21	61	82	10.6

TOTAL NUMBER OF DEATHS, 70

Of the fatal cases, there were—

- 3 cases of nephritis
- 13 cases of pneumonia
- 3 cases of embolus
- 2 cases of fat embolism
- 4 cases of so-called liver shock
- 1 case of suppurative parotitis
- 3 cases of septicemia
- 3 cases of peritonitis and
- 3 cases of cardiac complication, or
- 35 cases in which the surgery probably had some bearing upon their deaths, but over half of these cases were known to be poor risks. In fact, an analysis of these cases which did not recover would rather emphasize the danger of delayed surgery than the danger of the operation, itself.

There were—

- 9 deaths from peritonitis following a ruptured gall bladder
- 4 from carcinoma of the gall bladder
- 2 from acute pancreatitis
- 6 from cancer of the pancreas
- 6 from inanition
- 1 case 88 years old, with empyema of the gall bladder
- 1 case of cancer of the colon, with common duct obstruction and jaundice, and

6 cases which were violently jaundiced, and had been jaundiced for a long time, who just kept on dying. Most of these can be described as exploratory operations in hopes that we might be able to do something in an apparently hopeless situation.

This latter fact is especially brought out by an analysis of the last 100 cases operated.

ANALYSIS OF LAST 100 CASES OPERATED 6 DEATHS

One was an old man, 54, with cirrhosis of the liver, ascites, and an empyema of the gall bladder.

One was a woman, 68, who had been previously operated for ruptured gall bladder, who came into the hospital extremely ill and jaundiced. She was in the hospital 15 days before the operation during which time attempts were made to improve her condition by blood transfusions, etc., and who lived two and a half months after she was operated.

One was a young man, 26, who entered the hospital starved, with an enormously dilated stomach as the result of a pyloric stenosis. His gall bladder was removed because it was amalgamated into the mass of scar tissue around the pylorus. He lived some weeks after surgery and died of inanition.

One man, 66, and another one, 65, both had cancer of the pancreas.

One woman, 49, died of peritonitis, which we think was due to leakage of a suture line in the stomach.

None of these deaths certainly could be attributed to the surgery of the gall bladder, and only one of them could possibly have had any connection at all with the operative procedure.

IMPRESSIONS

Diseased gall bladder, or what somebody called cholecystic disease, referring to the biliary system, is a very common affliction, and is about four or five times as common among women as among men, and apparently more common among women who have had pregnancies than others. It affects people of all ages, but is more prevalent after the age of 35. Not nearly all of them have stones, and many of the worst cases with most extensive damage to the liver and other organs do not have stones. Some of these cases can be helped by diet and medication—that is, without surgery, but there is no reason for any argument between the internist and the surgeon about this, because cases are not coming to the surgeon until they have tried something else, usually many things. The cases that do come to the surgeon are usually cases who have had trouble for any place from five to 30 years, and of whom a large per cent are poor risks, because of age and other conditions secondary to the prolonged trouble about the gall bladder and the biliary tree. Many of them, in fact, are in such a condition that surgery is attempted because it is quite evident that something has to be done or the patient cannot survive, and often in these very desperate cases, the results are very gratifying, too.

Results in gall bladder surgery, taking into consideration the length of time these people have been afflicted, and the condition they are in when they come to the surgeon, are astonishingly good, and the death rate is very low. It is much easier for me to understand why a good many of these cases do not obtain complete relief, than it is to understand how so many of them do. The ability of the liver and the pancreas, especially the liver, to recover, must be enormous. I think the death rate from gall bladder surgery, if done reasonably early on people who are not too old, who still have fairly good hearts and kidneys, and not too much liver damage, is very low—probably not more than one or two per cent. I also feel that although many cases will go through life and live their normal length of time with trouble in the gall bladder, if all cases of gall bladder disease, that is, those with gall bladder disease who have been given a reasonable chance to recover, were operated while they are still in good condition, that the average length of life would be much increased and the average health much better. I think the chances of the patient with a diseased gall bladder developing a cancer of the gall gladder, if he tries to keep his gall bladder, are about as great as the operative risk, if surgery is done early before there is too much secondary damage, to say nothing of the other risks he runs by trying to avoid removal of his gall bladder.

I have had my share of people who have come back complaining of trouble, and quite a few of them do have somewhat the same symptoms they had before the operation, though very rarely as severe. We have found that a large per cent of these cases have an achylia, and in the last few years I have determined this fact in all cases, and if they do, have put them on hydrochloric acid. If they do not get acid, they are liable to have a good deal of flatulence and discomfort. Also, some of them, I think, have trouble due to infection in the liver, which does not always clear up

I believe these cases with liver damage should be kept under observation for some time, their diets regulated, and an attempt made to improve their general condition as much as possible. Some of them seem to have symptoms due to a spasm of the sphincter, and, of course, some of them have trouble because stones are overlooked in the ducts, or because an infected biliary tree was not drained. I think, however, that some of the reports in recent literature in regard to the high percentage of these cases of common duct stone, and of cases requiring common duct drainage, are too high, and that like other classes of people, we sometimes go to extremes.

I believe it is safer to prepare these cases for operation by putting them to bed and seeing that they are well fed, giving them a few days' rest, pushing fluids, and saturating them with glucose. I believe that this will eliminate a large per cent of those cases who develop what was formerly called liver shock—that is, a high temperature, rapid pulse, vomiting, and even evidence of nephritis—some of whom die. I think it is better, also, to allow the patient to recover from his attack if he will, and certainly a very large per cent of them will.

I think it is safer to remove the gall bladder from the fundus downward than from the duct upward. In this manner, very good peritoneal flaps can usually be obtained for suturing over the raw surface on the liver. The cystic artery can be better visualized, and if it should be cut accidentally, it can be picked up easier; and, since there can be any conceivable anomaly of the ducts—the hepatic duct can even wind around the cystic duct—this type of removal makes duct injury much less likely.

I am of the opinion that it is better to use drainage. It is certainly not always necessary, and I have closed some of them myself without having any trouble, but quite a few of these cases have an astonishing amount of drainage for about a day or two, and it would appear to be better to allow this to escape on the dressings than to be retained. I think it is also a very good thing to tuck the omentum in between the liver and the duodenum following the operation. If there are stones in the common duct, the duct should be drained. If there are no demonstrable stones in the duct, whether or not it should be drained, depends probably more upon the symptoms the patient had before he was operated, than upon what is found at the time of the operation. The glucose should be continued postoperatively until the patient can take fluids freely.

I am under the impression that there are too few gall bladders treated surgically; that the number of these cases is very much greater than the number who are operated without sufficient justification; also, that the tendency is to be operated too late, rather than too early; that the disease can be diagnosed very accurately, and that postoperative symptoms are much more apt to be due to secondary damage and to co-existing disease, or conditions acquired subsequent to the surgery, than to error in the diagnosis.

Analysis of Reports

CHOLECYSTECTOMIES

Total Number—280

Complete relief	169	or 60.3%
Almost complete relief	54	or 19.2%
Partial relief	52	or 18.5%
No relief	5	or 1.7%

COMPLICATING CONDITIONS PRESENT AT TIME OF OPERATION

Gall stones	89	Kidney stones	3
Stone in duct	11	Gastric or duodenal ulcer	10
Hepatitis	39	Gangrenous G. B.	2
Pancreatitis	9	Lues	1
Ventral hernia	1		

TROUBLE DEVELOPED SINCE

Asthma	1	Female trouble	3
Low blood pressure	1	Neuritis	1
Nervousness	2	Headaches	3
Malta Fever	2	Heart trouble	2
Constipation	2	Lues	1
Diarrhea	1	Colitis	1
Rheumatism	6	Insane	7
Arthritis	2	Diabetes	1

1 died later of cancer of the liver.
1 died 4 years later of brain tumor.

CHOLECYSTOTOMIES

Total number—48

Complete relief	29	or 60.4%
Almost complete relief	7	or 14.5%
Partial relief	12	or 25. %

1 woman, 78, stones, still living and in good health 5 years later.

COMPLICATING CONDITIONS PRESENT AT TIME OF OPERATION

Gall stones	17	Empyema	6
Stones in duct	5	Rupt. g. b. with abscess	1
Pancreatitis	1	Jaundice	1
Hepatitis	1		

TROUBLE DEVELOPED SINCE

Hernia	4	Rheumatism	2
Constipation	4	Diabetes	2
Hemorrhoids	2	Biliary fistula	1

1 had relief 6 months, anastomosis later.
1 had relief 1 year, anastomosis later.
1 had relief 4 years, anastomosis later.
All have complete relief since.
1 had partial relief 2 years, anastomosis. Still has trouble.
1 died of a stroke, 8 years after operation.

ANASTOMOSIS

Total Number—34

Complete relief	18 or 52.9%
Almost complete relief	5 or 14.7%
Partial relief	11 or 32.3%

COMPLICATING CONDITIONS PRESENT AT TIME OF OPERATION

Gall stones	13	Pancreatitis	2
Stone in duct	7	Jaundice	7
Kidney stone	1	Cancer of liver	1
Previous drainage	6		

TROUBLE DEVELOPED SINCE

Diabetes	1	Parkinson's	1
Malta Fever	1	Pancreatitis	1

1 patient age 41. Cancer of liver, lived 3 years.
1 patient 70. Stones. Degenerative disease of liver, heart, and kidneys—lived 3 months.
1 patient 66. Empyema. Stones. Stone in cystic duct. Died a few years later of pneumonia.

We were able to trace 362 cases. Of the cases reporting, a much larger percentage of the cholecystectomies reported than the other cases, which can be explained by the fact that a large per cent of the drainage cases were operated years ago, and more of them have died since or moved away, and could not be reached. There are so few of the drainage cases that reported that it is not possible to make much of a comparison between the two types of cases. My impression is that there were somewhat better results in the cholecystectomies than in the cholecystotomies, but the majority of the drainage cases were cases in whom there was more pathology than in the cholecystectomies, and in the last half of the period covered by this report, the gall bladder was almost invariably removed, except in such cases, who because of their age, or because of the condition found at operation were not considered safe cases for removal of the gall bladder. These tables are made out as reported by the patient, but I am convinced that they are not very accurate.

One question in the questionaire was in regard to other diseases since the operation which the patient may have had, and there was also a place for remarks. Those cases who say they are completely relieved probably are. Unquestionably, a great many of the cases who reported that they were not completely relieved, were relieved, but were having ill health from some other reason. It was rather the rule for those cases reporting partial relief to recite a list of afflictions which were causing them trouble at the present time, and not mention their liver area at all. I also noticed in comparing the questionaires with the records, that a very large per cent of those cases who did not report complete relief had a great deal of secondary pathology, particularly marked hepatitis, quite a few of them gastric or duodenal ulcer, and some of them chronic pancreatitis. I am convinced that a great many cases which have some symptoms after removal of the gall bladder have them as a result of liver damage before the surgery. In fact, it is hard to understand, after inspecting some of these livers how the patient can ever be well at all.

There was a greater per cent of complete relief in cases where the information was obtained from the doctor than where it was obtained from the patient. If the patient was not enjoying good health at the time of the report, the doctor stated the reason why he was not. There was frequently something quite foreign to his gall bladder condition in which we were interested, while a large per cent of the patients seemed to be unable to make this differentiation.

There was a somewhat greater percentage of complete relief in those cases who had stones than in those who did not. This could be explained, of course, in a good many ways. One could be that where there are stones present in the gall bladder there is not much chance of the diagnosis having been incorrect, while in the absence of stones perhaps the diagnosis might be incorrect, and the patient might have been operated and his gall bladder removed when the cause of his ill health was elsewhere. However, I think that the explanation is more likely to be this—that

a great many cases have stones in a gall bladder which does not appear to be very abnormal, and a great many with a liver which does not show much evidence of damage, while in those cases which have gall bladders which are markedly pathological, there would seem to be a greater percentage of abnormal livers. Or, to put it in another way, if the symptoms are not due to stones, they are more likely to be due to an infection, and infection in the gall bladder is liable to be attended by infection in the biliary tree, etc.

There were 34 reports from cases in which there was an anastomosis made between the gall bladder and the stomach, or between the gall bladder and the duodenum. Eighteen, or 52.9 per cent reported themselves as completely relieved; five, or 14.7 per cent, as almost completely relieved, and 11, or 32.3 per cent reported themselves as having obtained some relief. Two of the cases which were not completely relieved had very serious liver damage. One had cancer of the liver, and one states she had relief for eight years. Two, under remarks, explained their present ill health by something entirely foreign to the gall bladder condition. This operation, of course, is done only in cases in which there is rather excessive pathology. One case had relief for a time and then had a recurrence of symptoms. She was re-operated. It was found that the os between the stomach and the gall bladder was closed. The gall bladder was removed and the common duct drained, and she has been quite well ever since. There was another case which was operated in 1923, at which time she had an empyema of the gall bladder with stones. The stones were removed and the gall bladder drained. She was operated again in 1929. She again had stones and an empyema of the gall bladder. The stones were removed and an anastomosis was made between the gall bladder and the stomach. She was operated again in September, 1938. She was jaundiced and the os had closed between the gall bladder and the stomach, and the gall bladder contained one fairly large stone. At this operation, the gall bladder was removed and a T-tube was placed in the duct. It has been there now for seven months.

The replies to these questionaires are very interesting. Of course, some just answer the questions and let it go at that. Some of them under remarks go into considerable detail of how much better they are now, and how thankful they are for the relief they have obtained, and how much they think of us, and others are rather sarcastic. One woman stated that about the only difference as far as she could see in her condition now and before the operation was as to who had the $150. Another one cursed me in considerable detail and ended up by saying, "You asked for it, so here it is." One lady said I was a long time showing any interest in her, but that she was willing to forgive me if I would ask her up to tell me all about herself. About the time I was beginning to feel right good, I usually ran onto a report that was not conducive to my self-esteem. Some of these cases, instead of filling out these reports came in to see me. One lady told me she did not think she was at all better, and after examining her I found she was suffering from hives and varicose veins. Another one said she had been considerably better for some time, but that now she was having just as much trouble as she ever had. Examination in this case revealed an achylia and an active undulant fever.

There is certainly a very strange tendency among a large per cent of our people who have had surgery to blame almost anything that happens to them at any period thereafter, to the operation. It is true that we had quite a number of reports in which the patient specified definitely that his present condition was not due to his gall bladder, but then also definitely specified the ailments he had at this time and what he thought they were due to. For instance, we have one report which I will quote: "I seemed to be in perfect physical condition for about a year and a half after my operation. Then a condition arose which was diagnosed by one doctor as a kidney ailment. A recurrence of the same ailment was diagnosed by another doctor as heart trouble. Frankly, I do not know which, if either, was correct, and I hope to be able to return for examination."

The way these reports are coming in, we

expect to receive them in dribbles for the next six months, and hope to be able to investigate these cases who do not report at least almost complete relief. I imagine that if we are able to accomplish this, that it will be very instructive. I think I shall ask the Journal to publish this later, as a sort of post-script on this report.

Repeated Convulsions in Children*

The Relation of Demonstrable Organic Pathology in Twenty-Two Consecutive Cases

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Within recent years the term "idiopathic epilepsy" has lost favor in clinics where the problem of repeated convulsive seizures has been encountered. This change is largely due to the increase in understanding of the underlying pathologies associated with this condition. It has been accepted that all true convulsions are a manifestation of cortical irritation whether due to a primary cerebral lesion or secondary to systemic disease. I fear that we are all prone to make such a diagnosis without obtaining a careful history and without thorough examination of the patient. Because we are unable to find the cause for many of these convulsive disorders it does not follow that they arise spontaneously nor that the problem will not be well understood in years to come.

As surgeons we are often disappointed, sometimes to the point of being discouraged, in finding so few children out of the many studied who have a correctable lesion. We have, however, been interested in the rather large number that has shown evidence of gross organic pathology. It is through a better understanding of the pathology found and its role in producing the convulsions that eventually we hope to aid more of these unfortunate children.

It has been our observation that the results obtained by the continued administration of sedatives of varied types have not been generally satisfactory. Fay and McQuarrie have advocated dehydration therapy in these cases. There are many instances of unquestioned benefit from the use of such measures but it falls short of solving the problem. The same can be said of the therapeutic effect of ketogenic diet. Each of these methods of treatment is directed at preventing the "cerebral explosion" and in most cases decreases the number of severity of the attacks for a time. The many instances of continued attacks in spite of all forms of conservative management, however, should stimulate us to further efforts instead of causing us to admit defeat.

We are concerned in this review of cases not with etiology or treatment directly but in the demonstration of gross pathologies made during the investigation of 22 consecutive cases of repeated convulsive seizures in children seen at the Crippled Childrens' Hospital during the year 1937. We do not presume that the pathology shown in each case is the cause of the convulsions but we do feel that in many instances there is a definite relationship between the two.

Each of the children selected for this review has as a chief complaint "convulsive seizures" or "fits." The descriptions of the attacks varied somewhat but were of general epileptiform nature, either grand mal or grand mal plus petite mal. There was one exception in which the seizure was of a tonic type. Occasionally

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there was a history of a focal origin of the attack. Some of these children had associated complaints and in some there were physical findings indicating organic cerebral lesions. The children ranged between the ages of one and 18 years at the time of their investigation (Fig. 1). The duration of the attacks was from one month to 18 years with the majority being less than five years (Fig. 2). We are struck with the large number that began having attacks before the age of one year (Fig. 3).

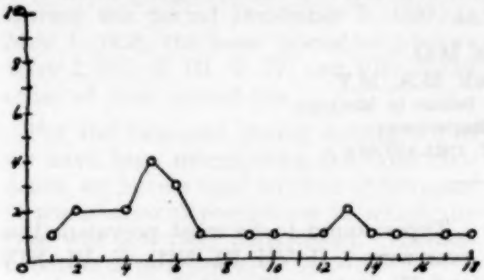

FIG. I
Age at Time of Investigation.
Horizontal—Age in Years.
Vertical—Number of Patients.

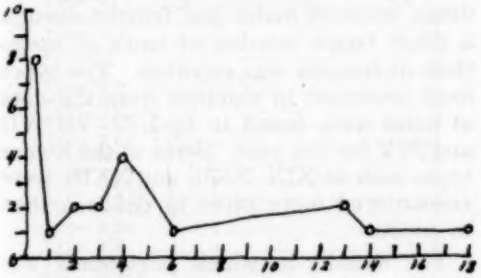

FIG. II
Duration of Attacks.
Horizontal—Number of Years.
Vertical—Number of Cases.

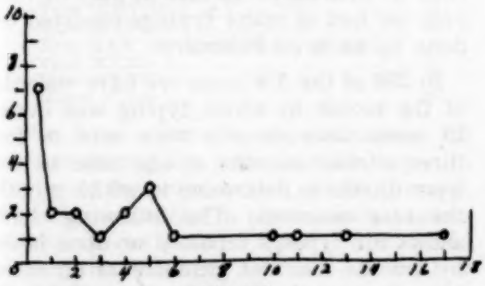

FIG. III
Age at Onset.
Horizontal—Age in Years.
Vertical—Number of Patients.

The pathologies demonstrated in 15 of the 22 cases were as follows:

Condition	Incidence
Intestinal Parasites	2
Diabetes	1
Hyperinsulinism	1
Telangiectasis of Parietal Bones	1
Fracture of Skull with Extra-dural Hemorrhage and Pontine Hemorrhage	1
Right Frontal Lobe Neoplasm	1
Cerebellar Neoplasm	1
Cortical Atrophy, Internal Hydrocephalus or Porencephaly as Demonstrated by Encephalograms	10

Pendergrass, Southard and Thom, and others have demonstrated gross cerebral pathologies by encephalographic studies and post-mortem examinations. Every neurosurgeon has seen gross changes in the brain, its vessels or coverings while attempting to relieve a convulsive disorder of focal nature.

As we have said before, we are discouraged at times because so few of the patients investigated have lesions even when demonstrated that are amenable to treatment. You will probably ask: "What has been gained as far as the individual patient is concerned even though a probable organic cause for the convulsions has been found, if the attacks cannot be relieved?" In diseases as in most other things we fear most that about which we know least. Each time I hear the diagnosis of Idiopathic Epilepsy I am reminded of the definition of idiopathic which the late Dr. M. Smith made while in a facetious mood—"Idio—I don't know; pathic—a damn thing about it." It has been our experience that the parents of these children can much better accept the situation if some tangible condition is explained or demonstrated to them as to the cause of their child's attacks, than to supply a diagnosis the meaning of which they obtain chiefly from the lay press or the family medical book.

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Second Year of Survey of Type Incidence of Pneumococcal Infections in Oklahoma

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During the period of May 1, 1938, to June 1, 1939, we had reported to us or typed by us a total of 518 cases of clinical pneumonia or pneumococcic meningitis. In 357 cases the causative agent of the pneumonia was proven by cultural and serological methods. Of these 357 cases, 339 were definitely proven to be pneumococcal in origin with the following distribution of types.

Type I	56
Type II	51
Type III	34
Type IV	9
Type V	14
Type VI	10
Type VII	48
Type VIII	28
Type IX	3
Type X	5
Type XI	7
Type XII	5
Type XIII	2
Type XIV	9
Type XV	9
Type XVI	4
Type XVII	0
Type XVIII	6
Type XIX	4
Type XX	4
Type XXI	2
Type XXII	2
Type XXIII	4
Type XXIV	1
Type XXV	0
Type XXIV (no typing sera)	—
Type XXVII	1
Type XXVIII	3
Type XXIX	4
Type XXX (No typing sera)	—
Type XXXI	0
Type XXXII	1
Mixed Types I & II	3
Mixed Types II & V	1
Mixed Types III & XI	1
Mixed Types X & XX	1
Mixed Types III & VIII	2
Mixed Types IV & VI	1
Mixed Types XXI & XXII	1
Mixed Types VII & XIX	1
Mixed Types II, V & XIX	1

Of the 18 other cases in which the causative agent was determined, 13 were streptococci, three were caused by the influenza bacillus and one by Friedlander's bacillus and one staphylococcus.

Types found to be most prevalent this year were I, II, VII, III, VIII, V, VI, XIV and IV in the order of their prevalence. We were not able to learn the age and sex of the patients in all cases but there was apparently no difference in type incidence between males and females though a much larger number of cases in males than in females was reported. The types most prevalent in children from the data at hand were found to be I, V, VII, VII and XIV for this year. Some of the higher types such as XIX, XXII, and XXIX were encountered more often in children than in adults.

The months in which pneumonia was most prevalent this year, according to the typings done, were December, January, March and April. There was a sharp decline in February. In fact in May of this year we had as many typings reported or done by us as in February.

In 298 of the 339 cases we have records of the month in which typing was done. In some cases records were sent in for three or four months at one time so we were unable to determine in which month the case occurred. The following chart shows the typings reported or done here, by months, also the incidence of all cases of pneumonia from all causes as reported to the State Health Department.

Typings done or reported	Cases of Pneumonia Reported to the State Health Department
August, 1938, 2	26
September, 1938, 3	29
October, 1938, 7	71
November, 1938, 12	100
December, 1938, 42	322
January, 1939, 58	408
February, 1939, 32	317
March, 1939, 58	261
April, 1939, 48	278
May, 1938, 32	119
June, 1939, 4	43

Mr. J. C. Rose, the State Statistician, reports that the total number of cases of pneumonia, all types, was 1,805 for the months of May 1, 1938, to June 1, 1939. During the period December 1, 1937, to May 1, 1938, the most prevalent types were I, VII, II, III, V, IV, and VIII, in the order of their prevalence.

For the two-year period during which we have been determining the type incidence, we have a total number of 606 cases of pneumococcal pneumonia in which the type was definitely determined. The distribution is as follows:

Type I	133
Type II	88
Type III	67
Type IV	17
Type V	24
Type VI	13
Type VII	98
Type VIII	34
Type IX	6
Type X	7
Type XI	9
Type XII	6
Type XIII	2
Type XIV	14
Type XV	9
Type XVI	5
Type XVII	2
Type XVIII	7
Type XIX	8
Type XX	6
Type XXI	7
Type XXII	5
Type XXIII	9
Type XXIV	1
Type XXV	1
Type XVI (No typing sera available	—
Type XXVII	1
Type XXVIII	3
Type XXIX	5
Type XXX (No typing sera available)	—
Type XXXI	0
Type XXXII	2
Mixed Types	17

We have reviewed approximately 100 papers during the past year dealing with typing of the pneumococci, serum therapy, and chemotherapy in pneumococcal infections. These papers were distributed among the following Journals—Journal of the A.M.A., Southern Medical Journal, American Journal of Public Health, Journal of Medical Sciences, Journal of Laboratory and Clinical Medicine, and American Journal of Medical Technology.

It is not the purpose in this report, nor is it possible to review the results of all these investigations. It does seem important to briefly point out the general conclusions to date.

I. The Neufeld rapid method of typing pneumococci is established as a reliable time saving laboratory test for making a specific diagnosis in pneumococcal infections, especially pneumonia and meningitis.

II. Types most prevalent in Oklahoma as shown by the two-year survey to date are I, VII, II, III, VIII, V, IV, and XIV.

III. Every case of suspected pneumococcal infection should be typed as early in the course of the disease as possible. The typing should be done before serum or chemotherapy is started. This applies especially to chemotherapy, particularly sulfapyridine. This drug has been found by numerous investigators to have a dissolving effect on the capsules surrounding the pneumococci. Others claim that it does not dissolve the capsule. (MacLeod, Journal A.M.A., October 7, 1939.) However that may be, our experience as well as the experience of others has been that its use before typing renders the procedure difficult, prolongs the time required, and may result in failure to type at all. It is now definitely established that sulfapyridine is not equally effective in all types of pneumococcal pneumonia, for example Dr. D. Seargeant Pepper and others in the July, 1939, issue of the American Journal of Medical Sciences report the use of sulfapyridine therapy in 400 cases of typed pneumococcal pneumonia. Eighty-four per cent of these cases were caused by Types I to VIII and Type XIV. They report a mortality of 5.8 per cent in Type I treated with sulphopyridine, 6.7 per cent in Type II and 16.4 per cent in Type III. Dr. L. H. Schmidt in the Procedings of the American Society of Biological Chemistry for July, 1939, reports as follows: "Treatment with sulfapyridine seemed to show the greatest efficiency in Types I and VII infections, next in IV, V, VI, XI, XXII and XXIX. On types II, III and VIII it had little curative action although it did prolong life."

Williams and Morgan writing in the Southern Medical Journal for June, 1939, and Dr. Colin M. MacLeod in the Journal of the American Medical Association for October 7, 1939, sum up the sulphopyridine pneumonia situation in harmony with the great majority of investigators. Williams and Morgan say: "Since the available evidence suggests that sulfapyridine and

specific aintipneumococcus serum exert their favorable influence upon pneumococcic infections through distinct and, possibly, altogether unrelated mechanisms, it appears reasonable to hope that a combination of the two agents will give better results than have been obtained when one only is utilized." Dr. MacLeod writing on the chemotherapy of pneumococcic pneumonia states: "Sulfapyridine gives promise of reducing the death rate from pneumococcic pneumonia and present indications make it seem probable than an even greater reduction in the mortality rate can be accomplished if the drug is used in conjunction with type specific antipneumococcus serum."

Practically all the investigators agree that the introduction of sulfapyridine and sulfanilamide is in all probability the greatest contribution to chemotherapy since the introduction of the arsenicals in the treatment of syphilis. They are very definite in their statements that it will require a great deal more study and investigation of these compounds before we will have an adequate knowledge of their pharmacology, toxicology and therapeutic value. It therefore follows as a final conclusion that every infectious disease treated with sulfanilamide, sulfapyridine, or any of the various preparations containing them or their derivatives should have an early accurate and specific diagnosis. It is only by so doing that we can arrive at a scientific evaluation of the effects of treatment. I wish to stress this final conclusion because when sulfapyridine was first introduced a great many thought that at last a chemical compound had been found that was effective in pneumococcal infections regardless of the type. I am sure that as a result of this belief although there were 1,805 cases of pneumonia reported in the state last year, in only 518 cases was an effort made to determine the cause of the pneumonia, in fact we received reports from several sources that they had discontinued typing of pneumococci, or trying to discover the etiological agent because they were now using sulfapyridine.

We wish to continue this survey for a third year, so again we are asking the cooperation of the doctors, hospitals and laboratories throughout the state in reporting typings to us and sending us specimens from such places in the state where facilities for typing are not available. We wish to thank the following institutions for their excellent co-operation during the past two years:

OKLAHOMA CITY—
- State Department of Health (also their related laboratories)
- University Hospital
- Crippled Children's Hospital
- St. Anthony's Hospital
- Wesley Hospital
- Samaritan Hospital
- Oklahoma City General Hospital
- Polyclinic Hospital
- McBride's Reconstruction Hospital
- Hubbard Hospital
- Medical Arts Laboratory No. 1
- Medical Arts Laboratory No. 2

TULSA—
- St. John's Hospital
- Nelson Clinical Laboratory, Medical Arts Building

MUSKOGEE—
- Musogee Baptist Hospital
- U. S. Veterans' Administration Facility

ENID—
- Enid General Hospital

SHAWNEE—
- A. C. and H. Hospital

McALESTER—
- Lattimore Laboratories

CHICKASHA—
- Chickasha Hospital

GUTHRIE—
- Cimmarron Valley Wesley Hospital
- Louis L. Share Laboratory

PONCA CITY—
- Ponca City Hospital

NORMAN—
- University of Oklahoma Infirmary

DUNCAN—
- Weedn Hospital

FORT SILL—
- Station Hospital, Field Artillery School

EL RENO—
- El Reno Sanitarium
- Fort Reno Remount Station

In addition we had reports from private physicians in Blackwell, Lawton, Pawhuska, Chickasha, Cromwell, and Commerce.

This investigation was made possible by funds appropriated by the State Legislature for research purposes.

Children's Food Dislikes

"There is no one food, with the possible exception of milk, which is absolutely essential in the child's diet," William I. Fishbein, M. D., Chicago, declares in the October issue of Hygeia, The Health Magazine.

It is not necessary, he believes, to force a child to take any food which he dislikes, inasmuch as satisfactory substitutes are available. As the child grows older food dislikes often disappear, although many persons carry some of them over into adult life with no harm to themselves.

Asphyxia of the Newborn*

W. M. TAYLOR, M.D.
Emeritis Professor of Pediatrics, School of Medicine,
University of Oklahoma
OKLAHOMA CITY, OKLAHOMA

For a pediatrician to offer suggestions for the resuscitation of the infant, is real temerity, as perhaps less than half of one percent of the newborn have the services of a pediatrician available. Nevertheless with closer cooperation of the pediatrician and obstetrician each may learn something from the other and therefrom contribute something which may reduce the high mortality of fatal first 14 days of life. This is too high, and though much has been said about it not much has been done about it in the past 20 years.

The term "asphyxia" is used to describe all cases in which spontaneous respiration is not established with sufficient promptness to or sufficient force to maintain life[1].

Clinically the distinction between asphyxia livida and pallida is easily made: The practical factor is that the differential diagnosis suggests the management to be followed as it is in the latter that prompt and efficient treatment is imperative.

Eastman finds no fundamental difference between clinical livid and pallid asphyxia other than the degree of changes in the blood[2]. In livida the predominating symptoms and signs are those of good muscular tone, forceful heart beat and cord pulsation, generalized cyanosis, response to external stimulation as from the air and mild stimuli of a more direct nature.

In the condition of asphyxia pallida one notes the flaccid muscles, the presence of blue lips with a waxy palor of the cold skin. Heart action is weak and usually slow. Apex beat cannot be felt. Pupils dilated. The jaw falls, the spinctor relaxed. The condition closely resembles shock and should be treated as such. It is not infrequently associated or due to intracranial hemorrhage.

*Read at the Meeting of the Southern Medical Association, Oklahoma Day, Oklahoma City, Oklahoma.

ETIOLOGY OF ASPHYXIA OF THE NEWBORN

Asphyxia may be of central or peripheral origin. Any forces which interfere with the free exchange of the placental fetal circulation or the oxygen carrying power of the maternal blood are factors:

1. Disproportion between the pelvis and presenting parts.
2. Premature separation of placenta.
3. Trauma with its danger to the respiratory center from pressure as in hemorrhage.
4. Depression of respiratory center from injudicious use of drugs such as morphine, barburates, anesthetics or other analgesics. One of the first effects of all drugs used to produce analgesia in labor is the depression of the respiratory center. This is especially true of the premature infant. The ideal anesthesic for labor has not yet been found.
5. Toxemia of the mother.
6. Obstruction of air passages by mucus and other fluids.
7. Developmental defects.

Intrauterine asphyxia should be expected with the passage of meconium with the vaginal discharge and with weakness or absence of heart sounds previously heard.

In a clinical and statistical study on "Apnea of the Newborn and Associated Cerebral Injury" read before the Section of Obstetrics and Gynecology of the A.M.A., San Francisco, in June, 1938[3], Dr. Frederick Schreiber of Detroit, presented a schematic diagram showing the relationship between the stages of oxygen deficiency and results of that deficiency and the possible degrees of cerebral damage from a deficient supply of oxygen. In his closing summary of this study as published in Jr. A.M.A. of October 1, 1938[4], Dr. Schreiber remarks:

"The depressing effect, on the respiratory center, of birth analgesics given in greater than pharmacologic doses bears a direct relationship to the degree of apnea. The extent of the apnea has a direct relationship with the severity of the cerebral symptoms after birth. The severity of the cerebral symptoms is in direct relation to the amount of damage to the brain tissue. From these relationships it appears that analgesics given in greater amounts than the pharmocologic dosage may in many instances be the causative factor of fetal anoxemia, with resultant cerebral damage in the infant."

Treatment

The prophylaxis of asphyxia as far as such is possible, is an obstetrical problem, and in each delivery which is prolonged for any reason, if instrumental or if the mother is narcotized to the degree of cyanosis, evidence of fetal distress, or in the premature, preparations should be made for prompt and efficient care for an asphyxiated infant, instead of the last minute rush which often happens in a busy delivery room.

A well trained interne or nurse who is able to direct the resuscitation in an intelligent way should be available, even to pass a tracheal catheter if there is evidence of obstruction by fluids, for which but little practice is necessary, though a delicate procedure. Good judgement and skill are required in management of such a situation.

McGrath and Kudor, Jr. A.M.A., March 14, 1936[5], suggest and I believe advisedly, the administration of oxygen and CO2 to the mother early in the progress of labor, as a prophylactic measure.

1. Immediate clearance of the upper air passages, nose, mouth and t h r o a t of mucus and other fluids should be routine, even in normal deliveries of the full term baby; for as too often happens with the first respiratory effort there is aspiration of fluids followed by a cyanotic attack. This can best be accomplished by posture and suction by means of bulb syringe, preferably with a hard rubber point; by inverting the baby and gently stroking the neck toward the chin. This last procedure is advised against if meningeal hemorrhage is suspected.
2. The cord is immediately cut and tied which may stimulate a respiratory act. This is also advisable if the mother is narcotized by morphine or ether, thus preventing further respiratory depression. Even in some instances the release of blood from cord may be beneficial.
3. If muscular tone is good, heart beat forceful, with deep cyanosis, which at this stage of asphyxia livida is normal, the infant should be wrapped in warm blanket, placed in a warmed bassinett and observed, not handled for a few minutes. Thus giving him an opportunity to initiate his own respiratory acts through natural channels which he usually does. If not, the very gentlest peripheral stimulation may be instituted as: (1) Contact of air with the skin. (2) Gentle pinching of the skin. (3) Slapping soles of the feet.

If cyanosis continues or changes to a palor and with no respiratory effort, heart sounds grow weaker and slow, dilated pupils and flaccid muscles, the infant is approaching the stage of asphyxia pallida. This clinical picture c l o s e l y approaches that of the baby delivered with an already existing intracranial hemorhage.

Treatment of Asphyxia Pallida

1. The upper air passages should again be cleared as above and the introduction of the tracheal catheter with suction applied to assure a clear air passage, thus permitting interchange of gasses by the pulmonary alveolar capillary system.
2. Whole blood 10 to 20 cc. should be given intramuscularly, and maintenance of normal body heat.
3. Clinical stimulation is on the whole disappointing t h o u g h metrozol, epinephrine, caffein sodium benzoate, may be used. Physiologic stimulation by the use of CO2 is the important method, if possible.

I am indebted to Dr. Gerry Rogers, member of the Obstetrical Staff of St. Anthony's Hospital, for the following suggestions in

the technique of passing the tracheal catheter.

4. If child is very apnic, insert finger into pharynx and palpate epiglottis. The glotteal reflex is the best index of the degree of asphyxia or narcotization. Prompt removal of accumulation of mucus in the larynx may be done with tracheal catheter. By introducing the finger far enough to plug the pharynx the glottis and tracheal opening may be palpated with the palmer surface of the finger and the catheter is guided into the trachea. He follows with this advice — "Practice on the stillborn. Never lose this opportunity until the technique is mastered." The use of a head stethroscope as a prophylactic measure cannot be over emphasized. This requires ausculation of the heart tones at 10 to 15 minute intervals during the second stage of labor; the obstetrician's duty unless another dependable attendant is present. He believes that 50 per cent of asphyxia (not narcotization) may be diagnosed prior to delivery, and delivery, providing of course, that conditions for extraction are present, a high percentage of these babies may be saved.
5. Tracheal catheter inserted just inside the trachea, aspirate mucus, reinsert to end of trachea, retract about one-fourth inch and reaspirate mucus. This should be repeated until air passages are clear (usual care to avoid trauma).
6 Gentle insufflation of lungs—mouth to catheter. Do not do this unless definitely indicated by deep asphyxia with evidence of circulatory failure as evidenced by brady-cardia. Then only if operator has no respiratory infection.
7. Insufflation of CO2-O2 (30-70 mixture); when respiration is established mixture is reduced to five per cent CO2—95 per cent O2.
8. Stimulants only when evidence of medullary pathology.

A Few Points to Remember

1. The baby with asphyxia pallida should be treated as for shock and with the same gentle care as any other "head injury." Do not traumatize to stimulate respiration. Maintain body heat.
2. Gaseous exchange is possible only when the air passages are clear.
3. Insufflating mucus into the lung after cord is severed can drown infant.
4 Once the air passages are clear, one need not fear narcotization except in the premature. There is a definite ration in the amount of trauma incident to labor and delivery and the degree of asphyxia.
5. Do not insufflate forcibly into the fetal lung, nor attach any apparatus for administering gas into lung in a direct closed system.
6. Traction on tongue will help keep glottis open in deep asphyxia.

As Flagg has expressed it[6] "In the management of the asphyxiated newborn infant it has become increasingly clear that the primary indication is not for vigorous external stimuli, but rather to provide and maintain a clear air passage, and to supply oxygen in some way to the circulation. Whether this be accomplished by mouth to mouth technique or by several of the more elaborate mechanical devices is of secondary importance." To substantiate this a few citations may be of interest and stimulate persistence in efforts at resuscitation even with the most discouraging outlook.

The recent acquisition of the new modified Drinker respirator and incubator combination by the St. Anthony Hospital Obstetrical and Newborn service, has added a new impetus to observe this method of mechanical artificial respiration in the asphyxiated infant.

Tow mentions[7] several cases of recovery having been reported after continued efforts at passive artificial resuscitation lasting from 20 to 64 minutes before any evidences of breathing were perceptible.

On our service we have had opportunity to observe two similar instances in infants born in the stage of asphyxia pallida, having all the appearance of a dead baby with only a weak heart beat to suggest it was alive. In both infants the mucus and fluids were first removed from nose, pharnyx and mouth by methods as above advised.

Case Report—No. 113307. Evans: Born February 14, 1938—St. Anthony's Hospital, Oklahoma City. Spontaneous delivery, full

term, short labor. Ether anesthesia given mother the last 30 minutes. Morphine grs. 1/6, five hours before delivery. Born in state of asphyxia pallida. Heart sounds weak and slow, no other signs of life. Fluids removed from nose, throat and mouth. Placed in modified Drinker respirator; artificial resuscitation attempted by positive and negative pressure method. Baby was in respirator 24 minutes before first effort at breathing. Oxygen 95 per cent and CO2—5 per cent was supplied intermittently by the ether mask from oxygen tank. Remained in warmed incubator respirator for 24 hours, receiving CO- and O2 as needed for cyanosis.

Perfect recovery and baby taken home on the fourteenth day. Since leaving hospital have had no report of child's condition relative to remote effects of prolonged anoxemia.

Case Report — No. 114062. Chandler — Born March 31, 1938, at St. Anothony's Hospital, Oklahoma City. Born at full term of a primipara. Labor eight hours. Ether anesthesia given mother last 35 minutes before delivery. Morphine grs. 1/8, three hours previously. Baby in incubator resuscitator 30 minutes before first visible efforts at breathing. During resuscitationO—95 per cent and CO2—5 per cent was given intermittently with the idea of stimulating respiratory effort. Baby left hospital on the fourteenth day; condition good. At seven months the baby shows normal gain and normal mentality. No effort was made at tracheal insufflation while in respirator.

Summary

1. Gentleness and judgement must be the key note in management of asphyxiated infant.
2. The ideal anesthetic or analgesic has not been found.
3. Tracheal catheter insufflation in competent hands is the safest procedure, though prolonged passive mechanical resuscitation may be in some desperate cases, a life saving measure.

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5. McGrath and Kudor—Jr. A.M.A., March 14, 1936.
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ARCH FOE OF YOUTH

By Anthony M. Lowell, Assistant Statistician New York Tuberculosis and Health Association

Over half the tuberculosis deaths in the United States occur in the age period 15 to 45, the main ages at which the individual is economically most productive and socially important to his family and the community. Tuberculosis strikes down those who are young and those in whom their elders have invested long years of cherishing care. This peculiarity, that it kills in the young adult years, makes tuberculosis a far greater social evil than those illnesses which take lives at later years when family responsibilities are less heavy.

Although tuberculosis is the seventh leading cause of death at all ages, it ranks first in number of deaths from 15 to 45 years. In 1937, of the more than 250,000 deaths from all causes in this age group, tuberculosis accounted for 15 per cent, heart disease 11 per cent, pneumonia nine per cent, cancer six per cent, kidney disease four per cent and cerebral hemorrhage two per cent.

It is interesting to note that between the ages of 15 and 45 the tuberculosis death rates for both the male and female colored population are three to six times those found among the white.

An unusual characteristic of tuberculosis in the 15 to 30 age group is that in the early years it is of greater danger to the young woman than to the young man. During these years tuberculosis kills about 50 per cent more women than men. In this period tuberculosis may well be called a young woman's disease. After this age the number of male deaths exceeds that of the female.

No specific reason is assigned as the sole cause for the high rates among young women; however, these years are the strenuous years of a woman's life. The physiological, as well as the psychological, changes that take place in the growing female tend to make her unusually susceptible to tuberculosis. Childbearing and care of the child by the young mother are additional hazards that may contribute to an elevation of the tuberculosis death rate. It has been shown that this variation of tuberculosis mortality rates is essentially biological. After the age of 30 there tends to be a change in the woman's manner of living. The frequency of childbearing is less and in the main the woman's life takes on a more leisurely tempo.

Among males the situation is reversed. It is after 30 that greater demands are made upon the physical reserve of the young man. As the provider for the family his efforts are expended upon holding his job. The demands of his work, continued physical and mental strain, combined with the fact that he too often is unwilling or unable to keep in optimum physical condition, tend to decrease his power of resistance to disease. At this time of life he fails to heed the subtle signs of approaching illness.

Tuberculosis creates the greatest havoc among those least able to afford prolonged illness and results in a lowered standard of family life. Statistical studies show that the highest tuberculosis rates are found among the lower economic groups. If the patient is a dependent, it means hardship to the parents to bear the heavy expense of prolonged periods of invalidism. The tangible effect is reflected in the fact that there is a curtailment of earning power during the years when under normal conditions this earning power should be greatest. For those in the younger age group it brings about a drastic alteration in the manner of living, as the entire social aspect of life must be abruptly reversed. Preventable tuberculosis deaths among young people are a devastating and unnecessary blow to social morale.

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EDITORIAL BOARD

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Reprints of original articles will be supplied at actual cost provided request for them is attached to manuscripts or made in sufficient time before publication.

Articles sent this Journal for publication and all those read at the annual meetings of the State Association are the sole property of this Journal. The Journal relies on each individual contributor's strict adherence to this well-known rule of medical journalism. In the event an article sent this Journal for publication is published before appearance in The Journal the manuscript will be returned to the writer.

Failure to receive The Journal should call for immediate notification of the Editor, McAlester Clinic, McAlester, Oklahoma.

Local news of possible interest to the medical profession, notes on removals, changes of addresses, births, deaths and weddings will be gratefully received.

Advertising of articles, drugs or compounds unapproved by the Council on Pharmacy of the A. M. A., will not be accepted.

Advertising rates will be supplied on application.

It is suggested that wherever possible members of the State Association should patronize our advertisers in preference to others as a matter of fair reciprocity.

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EDITORIAL

THIS CHANGING WORLD

Fortunately, medicine has not only met the demands of a rapidly changing order, but it has often anticipated the progress of civilization. It is doubtful if advances in any other field of medical endeavor has equaled those in the diagnosis, treatment and prevention of tuberculosis. It is also doubtful if changes in the management of any other disease have placed such heavy demands upon the family physician.

A few decades ago, the treatment was relatively simple. The family physician understood that an early diagnosis was important, but early or late, he was comforted by the fact that the treatment remained the same. Today, the family physician who makes a diagnosis of pulmonary tuberculosis faces a most difficult task. He is immediately confronted with the grave responsibility of determining whether the case is minimal, moderately advanced, or advanced; whether it is acute or chronic; whether predominantly unilateral or bilateral. He must also recognize the presence or absence of cavities, and, if cavities are present, he must determine their size and location, the character of their walls, and the condition of the surrounding tissues. He must consider the pleura, and, if possible, determine the presence or absence of adhesions; he must ascertain the position and mobility of the diaphragm and the mediastinal structures; he must at least attempt a clinical estimate of the vital capacity of the lungs; he must appraise the cardiovascular system, with particular reference to the integrity of the heart muscle; he must recognize serious complications when present, as well as other associated pathological conditions.

These demands require unusual knowledge of the anatomy and physiology of the intrathoracic organs; an appreciation of the pathology of tubercle from early proliferation to cavity formation; also special skill in physical diagnosis, plus the wisdom of clinical experience. Finally, fluoroscopic service and good stereoscopic X-ray films are indispensable. Other laboratory facilities and occasionally highly technical procedures are necessary in certain cases.

There must be a choice between home treatment and institutional treatment. In those chosen for institutional treatment, there must be a choice between routine management and surgical collapse; in those chosen for surgical collapse there must be a choice between artificial pneumothorax, intrapleural and extrapleural pneumolysis, phrenic-nerve interruption and thoracoplasty. Often there must be a decision with reference to simultaneous bilateral or successive bilateral pneumothorax; also with reference to cautious combinations of the various surgical procedures mentioned above.

It is obvious that modern advances in the treatment of pulmonary tuberculosis

have brought a multiplicity of problems. It is equally obvious that the family physician working alone cannot adequately meet all the above requirements. Even those who specialize in diseases of the chest must resort to team work in order to accomplish the best results.

While there has been no change in our opinion with reference to the efficacy of the fundamental principles of treatment, rest, diatetic and hygienic; and while in certain cases these principles can still be successfully applied in the home environment; modern therapeutic advances, which have proved such a boon to those suffering from tuberculosis, require the equipment and facilities of the sanatorium and hospital. The minimal and moderately advanced cases not responding to routine management, and all advanced cases, require special diagnostic consideration in order to determine appropriate therapeutic measures. With rare exceptions, such diagnostic studies cannot be successfully pursued in rural communities. Neither is it possible to apply the respective modern therapeutic measures outside the well-ordered institution.

The above discussion makes obvious the fact that the difficulties are not only professional, but environmental as well. If these difficulties are not overcome, many of those suffering from tuberculosis will be denied the opportunities for recovery and many, who are not yet obviously tuberculous, will be unnecessarily exposed to infection.

The effective application of ever-increasing knowledge in the field of pulmonary therapy demands intensive cooperative professional efforts, with increasing emphasis upon the patient's individual needs. In this cooperative program, the position of the family physician is very important. He should never lose touch with his patient, and consultants and specialists participating in the management of the case should help maintain a close relationship between the patient and his family physician. After the active therapeutic program is completed, the family physician should dominate the follow-up period which demands years of close observation.

Medical Defense Rules

Recently the office of the Executive Secretary mailed to all of the county societies the rules under which members of the Association might receive aid from the Medical Defense Fund. Since that time, there have been numerous requests that these same rules be published in the Journal so that each member of the Association might have a chance to review them.

The present rules governing the Medical Defense Fund are the same rules that were adopted at the time of the establishment of the Fund and are interpreted by the Committee on Medical Defense, appointed by the President of the Association. At the present time, this committee is composed of O. E. Templin of Alva, J. S. Fulton of Atoka, and L. C. Kuyrkendall of McAlester.

The rules governing the funds are as follows:

1. Suit must be reported as soon as service is received.

2. Report must include copy of petition and answer, if one is made.

3. Member is not subject to coverage if he carries other liability insurance.

4. Assistance will be given up to the amount of $100.00 toward attorneys' fees. If the fee is less than $100.00, the full amount will be paid.

5. No protection is given in cases of criminal malpractice or where the physician is under the influence of alcohol or narcotics.

6. Contact immediately the office of the Executive Secretary, 210 Plaza Court, Oklahoma City, as per the above rules, in order that consideration of your request can be brought at once to the attention of the Medical Defense Committee.

Should these rules not be clear to any member of the Association or should you desire further explanation of any particular rule, feel free to address an inquiry on the point in question to the office of the Executive Secretary, and every effort will be made to give you the proper interpretation.

Board of Ophthalmology Announces Examinations

From the offices of the American Board of Ophthalmology comes this announcement:

WRITTEN EXAMINATION, March 2, 1940, in various cities throughout the country. This will be the only written examination in 1940.

All applications for this examination must be received before January 1, 1940. All applicants must pass satisfactory written examination before being admitted to oral examination.

ORAL EXAMINATION, New York City, June 8 and 10. Fall examination to be announced later.

CASE REPORTS: Candidates planning to take June examination must file case reports before March 1.

For application blanks write at once to Dr. John Green, 6830 Waterman Avenue, St. Louis, Missouri.

Fourth Assembly, United States Chapter of the International College of Surgeons

The officers of the United States Chapter of the International College of Surgeons cordially invite all physicians and surgeons in good standing to their Fourth Assembly, to be held in Venice, Fla., February 11-14, 1940. There is no registration fee.

For general information please address Dr. Fred H. Albee, Chairman, 57 West 57th Street, New York City. For information about the presentation of scientific papers or exhibits, query Dr. Charles H. Arnold, Secretary of the Scientific Assembly, Terminal Building, Lincoln, Nebraska.

Clinical Society Meeting Attracts Record Number

Widely acclaimed by attending physicians as the outstanding program ever achieved by the organization, the Oklahoma City Clinical Society concluded its four-day meeting in the capital city November 2.

With a registration of 714, the Clinical Society marked up the largest attendance of both city and out-of-city physicians in the history of the society, maintaining a record of attracting greater numbers with each annual meeting. Random comments from those in attendance were unanimous in acclaiming the 1939 affair as one of the best rounded programs for practitioners yet held in the nine years the group has been steadily growing.

Of great interest was the appearance of Dr. Rock Sleyster of Wauwatosa, Wis., president of the American Medical association, whose interesting and valuable address on the economic as well as other sides of modern medical problems was well received.

Among the guest lecturers were Dr. A. Graeme Mitchell of Cincinnati, professor of pediatrics at the Cincinnati University school of medicine; Dr. Edgar G. Ballenger of Atlanta, urologist with the Crawford W. Long hospital; Dr. Albert H. Aldridge, New York physician and professor at Columbia University; Dr. Emil Novak, associate professor of gynecology at Johns Hopkins Medical College; Dr. Marion B. Sulzberger of New York City; Dr. William A. Wagner of New Orleans; Dr. Hobart A. Reimann of Philadelphia; Dr. Frank H. Lahey of Boston; Dr. Erwin R. Schmidt, professor of surgery at the University of Wisconsin; Dr. John A. Kolmer, professor of medicine at Temple University school of medicine; Dr. Lewellys F. Barker of Baltimore; Dr. Joe Vincent Meigs of Boston; Dr. Herman C. Schumm of Milwaukee; Dr. Lowell S. Goin of Los Angeles; Dr. Harry S. Gradle of Chicago.

In addition to formal lectures, group meetings and round-table luncheons, the program included a dinner honoring Doctor Sleyster; the annual dinner-dance at the Chamber of Commerce; a dinner for women physicians; annual smoker for the men at the Oklahoma Club; a golf tournament at the country club, won by Dr. E. S. Edgerton of Wichita, Kans., with Dr. Roy Emanuel of Chickasha a close runner-up; and a complete program for wives of visiting doctors, arranged by the ladies auxiliary of the county society.

Texas led the out-of-state attendance, with Kansas and New Mexico in second place. Other states well represented were Colorado, Arkansas and Missouri. The meeting attracted doctors as well from Arizona, Montana, Pennsylvania, California and Louisiana.

Officers of the Clinical Society are: Dr. H. Dale Collins, president; Dr. Wendell Long, director of clinics; Dr. Basil A. Hayes, vice president; Dr. W. F. Keller, secretary; and Dr. J. H. Robinson, treasurer.

Editorial Notes—Personal and General

Dr. R. N. Holcombe was elected president of the Oklahoma Baptist hospital medical staff at the annual banquet and election meeting in mid-October. He succeeds Dr. H. A. Scott. Others elected on the staff were Dr. I. B. Oldham, Jr., vice president; Dr. S. D. Neely, secretary. Re-elected as executive committeemen were Dr. I. B. Oldham, Sr., Dr. J. H. White and Dr. W. P. Fite.

McAlester will be the meeting place for the next gathering of the Southeastern Oklahoma Medical Association, it was decided at a district meeting in Poteau in late October.

New president of the Pawhuska city hospital, elected at a staff meeting October 26, is Dr. Roscoe Walker. Other officers elected are Divonis Worten, vice president; and George K. Hemphill, secretary. Preceding the meeting, the doctors were entertained with a dinner.

Members of the Hughes County Medical Society, at their October meeting, passed a resolution asking the newspapers of Hughes county to refrain from use of hospital or clinic names in reporting receipts of patients. The resolution asked that any newspaper mention of patients be confined to statements that they had been treated by local doctors, or at local hospitals.

Appointments of new county superintendents of health within the past month, as announced by Dr. G. F. Mathews, state health commissioner, include: Dewey county, Dr. W. E. Seba of Leedey; Ottawa county, R. H. Duewall of Miami; Mayes county, Leo Evans of Pryor; Muskogee county, J. T. McInnis of Muskogee; Greek county, Dr. O. H. Cowart of Bristow; Pontotoc county, Dr. Ivan E. Bigler of Ada.

Dr. Rex Bolend of Oklahoma City announces that his offices have been moved from 1010 Medical Arts Building, Oklahoma City, to 1205 Medical Arts Building.

Three state surgeons, members of the Oklahoma State Medical Association, were among 496 on whom the American College of Surgeons conferred fellowships at its annual meeting in Philadelphia. They are: Dr. Clifford C. Fulton of Oklahoma City, Dr. Raymond G. Jacobs of Enid, and Dr. Oscar Clarence Newman of Shattuck.

OBITUARIES

Dr. W. A. Aitken

Dr. W. A. Aitken, 62, well-known Enid physician and surgeon for many years, World War veteran and widely known in medical and social circles, died October 15 at an Enid hospital.

Doctor Aitken received his medical degree from Washington University at St. Louis, coming to Enid in 1904, where he engaged in the practice of medicine and surgery until he volunteered for service in the Medical Corps of the United States army in February, 1918.

Dr. C. E. DeGroot

A medical career 35 years old was ended October 26 with the death of Dr. C. E. DeGroot, 60, of Muskogee, pioneer member of the medical profession in eastern Oklahoma. Death resulted from a heart attack.

Doctor DeGroot was a former president of the Muskogee County Medical Society, and last May was appointed federal jail physician at Muskogee, succeeding Dr. John Reynolds, former Muskogee mayor.

Dr. James B. Lightfoot

Dr. James B. Lightfoot, longtime Miami physician, died October 5 at the Baptist hospital in Miami, at the age of 74 years. He had been ill for several months.

Doctor Lightfoot received his medical degree at a Memphis college. After practicing for a time in Texarkana, Ark., he moved to Muskogee in Indian Territory. He went to Miami in 1917.

Dr. Thomas Owen Crawford

Dr. Thomas Owen Crawford, Dewey, Okla.; Gross Medical College, Denver, 1910; former member of Oklahoma State Medical Association; Superintendent of Health of Dewey, Okla.; aged 66; died, October 20, of pneumonia.

THIS LITTLE GIRL WILL HAVE A HAPPY CHRISTMAS *but*

Tuberculosis is still the greatest killer of youth . . . and takes *fifty per cent more girls* than boys between the ages of 15 and 25!

Two modern aids that help the physician detect tuberculosis in its earliest, *curable* stage are the tuberculin test and the chest X-ray.

Your purchases of Christmas Seals make it possible, not only to teach people that tuberculosis is preventable and curable, but to look for early stages of this dread disease among children who *seem to be* in good health.

So from now 'til Christmas, mail no letter—send no package—unless it is decorated with the Christmas symbol that saves lives!

BUY CHRISTMAS SEALS

The National, State and Local Tuberculosis Associations in the United States

ABSTRACTS : REVIEWS : COMMENTS *and* CORRESPONDENCE

SURGERY AND GYNECOLOGY

Abstracts, Reviews and Comments from
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"The Value of Cecostomy as a Complementary and Decompressive Operation," by Fred W. Rankin, M.D. Annals of Surgery, September, 1939, page 380.

One of the most important factors in the development of colonic surgery has been acceptance of the thesis that decompression either by surgical procedures or medical means is a highly important aid in returning a devitalized and desiccated patient, suffering from malignant disease, to a status approaching physiologic equilibrium.

When surgery is indicated, decompression may be easily accomplished in many cases by the employment of cecostomy. However, this procedure is frequently desirable both as the first stage of a graded operation, and as a complement to an offensive for extirpation of cancer. The indications given by Rankin for cecostomy he summarizes as follows:

"1. A complementary measure following:
   a. Obstructive resection;
   b. Resection and anastomosis of the intestine, end-to-end, or lateral;
   c. Exteriorization of a segment of the colon.
2. Decompression for intestinal obstruction:
   a. In acute obstruction secondary to cancer of the left colon or rectum;
   b. In subacute or chronic obstruction secondary to cancer of the colon or rectum unrelieved by medical measures.
3. A planned first-stage of a graded operation."

The author concludes that "(1) Cecostomy is a valuable adjunct to any type of resection of the colon. It prevents distention, moderates peristalsis, and promotes a smooth convalescence."

"(2) Its usefulness as the first-stage of a graded operation for radical removal of rectal cancer has been demonstrated."

"(3) Blind cecostomy for acute intestinal obstruction localized to the large bowel is a useful and often a life-saving operation."

"(4) It is desirable to use different technics to perform cecostomy for its several indications. Complete by-passing of the fecal current by bringing out a loop of the cecum or right colon is superior as a means of decompression and irrigation prior to resection. For complementary cecostomy, however, where relief of distention by gas is the paramount factor, a wing-catheter introduced into the cecum by Witzel's technic is very satisfactory."

LeRoy D. Long.

"Warm Moist Air Therapy for Burns," by Sidney Smith, M.S., Roy Rish, M.D., and Charles Beck, M.S. Archives of Surgery, October, 1939, page 686.

Modern therapy for burns attempts to alleviate the subsequent toxemia and secondary shock of severe burns by rendering any supposed toxins arising from the heat-killed tissue insoluble. For many reasons, the conditions for healing under the coagulum of chemically coalesced debris do not approach the optimum conditions existing under the natural fibrin eschar.

The possibility of obtaining more rapid healing by providing a more nearly ideal physiologic environment for the wounded area led to the study on rats, in which a comparative evaluation of various therapeutic agents and methods used as controls was undertaken.

Deep cutaneous burns were inflicted on etherized rats. Studies of recovery with various types of therapy or lack of therapy were undertaken. The speed of healing constituted the criterion of recovery. The results of the experiments were as follows:

1. The cutaneous burns of rats receiving the warm moist air therapy healed faster than those of controls living in ordinary air at room temperature, even when the controls received in addition typical treatments with well known therapeutic agents (butesin picrate and tannic acid).

2. The use of tannic acid and surgical excision in addition to the warm moist air therapy did not produce significant differences in the rate of healing in the experimental rats.

3. Surgical excision of the debris in the control group of rats was better than no therapy but was inferior to the chemical coagulants present in tannic acid or butesin picrate ointment.

Among the many physiologic factors which might account for these results may be listed the following:

1. Healing processes are markedly slowed in the presence of debris (Bauer; Hauberisser; Dressel). In the humidity chamber the moisture of the air kept the entire body wet, and this soaking action softened the debris, which was sloughed off the wound or picked off by the rats within the first five days.

2. Increase the local temperature by thermal application increases the rate of healing in rats (Fuke). Ebeling, using the alligator, made the same observation. In the humidity chamber the warmth provided exceeded the normal temperature of the skin.

3. Epithelial proliferation is faster in the presence of moisture (Burrows, 1924). The saturated air of the humidity chamber not only provides moisture but permits retention of water, for evaporation is minimal in saturated air.

4. Chief among the many factors that delay wound healing is infection (Carrel; Kiser). According to a report by Schade and Calussen, the ph of tissue may be a prime factor in the incidence of pathogenic invasion. These investigators, working with the quinhydrone electrode, found that healthy granulating tissue had a ph of 5.6 but that if the tissue became dry the ph rose to 8.3. If the alkalinity persisted, infection and sloughing occurred. Reimers and Winkler reported that carbon dioxide escapes from the surface of wounded tissue 30 times as fast as from uninjured skin. The fact that Reimers and Winkler reported a rising ph coinciding with drying of the tissue suggests the possibility that moisture may act as a vehicle in the retention of the acid radicals responsible for the lowered ph.

As for the tannic acid or butesin picrate ointment the authors believe that these substances possess no specific accelerative healing action. It would seem that their main function is to provide an insoluble coagulant over the wound. The incidence of infection under the coagulant produced by tannic acid has been reported many times and constitutes the chief objection to the use of the medicament.

LeRoy D. Long

Treatment of the Menopause with Estradiol Dipropionate. Edward M. Dorr and R. R. Green, Chicago, Illinois. American Journal of Obstetrics and Gynecology, Vol. 38, September, 1939, page 458.

"An estrogenic substance is any substance which has activities similar to those exhibited by the hormone of the ovarian follicle. In the human being, three clinically distinct and biologically active estrogenic substances have thus far been isolated." These are estrone (theelin), estriol (theelol) and estradiol. "Various observers do not agree as to the exact potency of these three compounds, but do agree that estradiol is more potent than estrone and that estriol is the least potent of the three substances." It has been demonstrated that esterification of estradiol or estrone leads to a more prolonged physiological effect, presumably due to slower absorption. Such a preparation is estradiol dipropionate which was used in these studies.

Sixty-two menopausal patients were treated with estradiol dipropionate in an attempt to determine whether the subsance would be clinically valuable or not when given in moderate doses at infrequent intervals. It was found that the substance had a prolonged effect and that patients could be given dosages of from one to five milligrams at two to four week intervals with relief of symptoms.

They found that estrone, a substance that is supposed to have the same minimal effective dose, has been subjectively and objectively inadequate when substituted for estradiol dipropionate.

Eleven patients in this series whose maintenance dosage of estradiol dipropionate had been determined, were given the same amount in milligrams of strone at the same time intervals. The patients were not informed of this substitution. Ten of the 11 patients had a recurrence of symptoms under treatment with estrone and when estradiol dipropionate was again given the symptoms disappeared.

Comment is made in the article to stilboestrol, a drug discovered by Dodds of England, effective by mouth, and having a remarkable estrogenic effect. These authors have not had experience with it.

The conclusions of the authors of this article are to the effect that estradiol dipropionate has a prolonged effect in human beings and that it is of unusual clinical value in that injections may be given at infrequent intervals. Their comparison with estrone has shown estradiol dipropionate to be clinically more effective.

Comment:

This is an article with practical significance and it is unquestionably true that the various estrogenic substances have different clinical effect, both qualitatively and quantitatively.

It is therefore important that the doctor know the most effective estrogenic substance to employ in therapy as well as to know the patient and the time in which it should be used.

I have used a certain amount of stilboestrol and, as all others who have employed it, I am markedly struck by its potency and efficiency. Stilboestrol or a modification of this drug will probably supplant most of the commercially available estrogenic substances.

Wendell Long

The Changes of the Urinary Tract Associated with Prolapse of the Uterus. By Arthur J. Wallingford, M.D., Albany, New York. American Journal of Obstetrics and Gynecology, Volume 38, September, 1939, Page 489.

This author is forcibly calling attention to the fact that neglected cases of uterine prolapse frequently have changes in the urinary tract as a result of the prolapse. These changes are hydroureter, hydronephrosis, and eventual renal insufficiency, probably caused by obstruction of the lower end of the ureter in the sling-like position of the uterine artery as it is pulled over the ureter.

Complete histories and laboratory findings in five cases of prolapse of the uterus and postmortem findings in one other case are fully reported.

It is pointed out that replacement of the uterus by pessary or operation relieves the obstruction upon the ureter and consequently prevents the pathological changes in the urinary tract.

Comment: I am sure that most of us have had the unpleasant task of seeing these neglected instances of uterine prolapse with consequent urinary changes. It would, therefore, seem unnecessary to add the admonishment that all instances of uterine prolapse be corrected.

Wendell Long.

"The Evaluation of the Human Vaginal Smear in Relationship to the Histology of the Vaginal Mucosa," by Samuel H. Geist, M.D., and Udall J. Salmon, M.D., New York, N. Y. American Journal of Obstetrics and Gynecology, September, 1939, Vol. 38, page 392.

In their work, the authors felt the need for a simple method of estimating ovarian function. Papanicolaou had demonstrated changes in the cytology of the human vaginal secretion corresponding to the follicle changes in the ovary. Subsequently, Papanicolaou and Shorr reported striking cystological characteristics in the human vaginal smear after the menopause or castration. Since the preparation of smears by Papanicolaou technique was complicated and long, Salmon and Frank simplified the procedure by diluting a little of the vaginal secretion with normal saline, spreading it upon a glass slide, allowing it to dry in the air and staining it for one minute with fuchsin. The smear was then washed with tap water and ready for examination.

These authors studied a group of 60 women with various degrees of estrogen deficiency, both menopausal and surgical and X-ray castration. Vaginal biopsies were taken and the degree of regression or regeneration was compared with vaginal smears before and after treatment with estradiol benzoate.

The vaginal smears and vaginal mucosa were classified into four groups, representing various degrees of estrogen deficiency. Because of their practical importance, the findings in each of their reaction groups of vaginal smears is quoted.

"Reaction I—(Advanced estrogen deficiency.) The characteristic features of this type of smear are the complete absence of squamous epithelial cells and the presence of small, round or oval epithelial cells with rather large, darkly-staining nuclei (atrophy cells). These are the cells which Papanicolaou and Shorr have described as 'deep cells.' Leucocytes and erythrocytes are present in varying numbers."

"In some smears the epithelial cells are few in number and associated with large numbers of leucocytes; in others, particularly in very old women, the epithelial cells are very small, few in number and are associated with a scattering of leucocytes and erythrocytes."

"Reaction II—(Moderate degree of estrogen deficiency.) There is a variable number of large, epithelial cells many of which are irregular in shape. The nuclei are relatively large. Inter-

spersed among these cells is a varying number of 'atrophy cells' and leucocytes. The relative proportion of the large epithelial cells to the 'atrophy cells' is variable. What distinguishes this smear from the I and III is the association of the 'atrophy cells' with the larger epithelial cells."

"Reaction III—(Slight degree of estrogen deficiency.) Predominance of rather large irregular epithelial cells is the striking feature of this smear. The cells vary in size and shape, their edges are somewhat irregular and frequently indistinct in outline. They frequently occur in clumps; a few 'atrophy cells' may be present."

"Reaction IV.—The smear consists of large, flat, clearly-outlined, squamous epithelial cells with small, deeply-staining nuclei. These cells are larger, more clear-cut and the nuclei relatively smaller than those in the III smear. No 'atrophy cells' and usually no leucocytes are seen."

The vaginal smears classified by these criteria were found to correspond with graded degrees of atrophy of the vaginal mucosa.

It was their finding that after treatment with estradiol the changes in the vaginal smear reflected clearly the regenerative changes in the mucosa. The vaginal smears prepared by the fuchsin method were entirely satisfactory and reflected the degree of regression as well as of regeneration. These authors therefore recommend it as a method which is simple and reliable for determining the presence of normal ovarian activity or estrogen deficiency as well as an indicator of the efficacy of administered estrogens in cases of estrogen deficiency.

Comment: At the present time, all quantitative methods for the determination of estrogen are moderately inaccurate and the interpretation of estrogen excretion in relation to ovarian function is not upon a stable basis. However, interpretation of qualitative tests is much more sound and of more clinical value at the moment.

The vaginal smear examination, so ably investigated by Papanicolaou, is purely qualitative and there has been a good deal of question as to its reliability. However, those who have carefully studied the smears and have religiously followed the criteria laid down by Papanicolaou, have found them to be of reliable qualitative clinical significance.

Wendell Long.

EYE, EAR, NOSE AND THROAT

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Ulcus Rodens Mooren. Original paper by Dr. Esther Dalsgaard Nielsen and Dr. G. Osterberg, Copenhagen, Denmark. Published in Digest of Ophthalmology and Otolaryngology, October, 1939. Volume 1, Number 12. Digested from Acta Ophthalmologica, Copenhagen, Volume 17, Fasc. 1, pp. 28-37.

"This disease was described first by Mooren in 1867 as a chronic superficial ulceration, beginning at the margin of the cornea and extending irregularly over the entire cornea, characterized by the sharply defined, undermined, line of infiltration between abnormal and apparently normal tissue and by pronounced superficial vascularization of the area involved. This disease does not stop till the entire cornea is involved, and it is accompanied by very severe pain. It preferably attacks elderly persons.

"The etiology of this lesion is as yet unknown. Various hypotheses have been advanced as to the cause of this lesion. Some authors have thought it involved an infection, and in some cases they have demonstrated the presence of Grampositive diplobacilli. Koeppe thinks that some cases are due to tuberculosis and that they respond favorably to treatment with tuberculin. Heintz attributes this ulceration to nutritional disturbances in the cornea; Junius and Triebenstein attribute it to trophic disturbances owing to pathological changes in the trigeminus. According to Junius and Triebenstein, these trigeminal disturbances would be apt to arise in various diseases, and thus the Mooren rodent ulcer would be the end-result of many lesions differing essentially as far as their etiology is concerned. In this connection it may be mentioned that the sensibility along the infiltration line is lowered in some cases, while in other cases there is an increased sensibility corresponding to the entire area affected.

"In itself the disease is so characteristic that it presents no differential-diagnostic difficulties; when less pronounced the lesion may be mistaken for rosacean keratitis, certain forms of corneal herpes, or neuroparalytic keratitis. It is to be kept in mind, however, that not all cases of ulcus rodens Mooren present all the characteristics described by Mooren. Thus, Axenfeld has described one case in which the lesion looked for a long time like any ordinary marginal keratitis. Salus has described one case in which the only sign of this lesion consisted in episcleritis; then an epithelial vesicle was formed on the limbus, and this was followed by a Mooren ulcer with the characteristic undermined line of infiltration and the marked vascularization of the whitish-grey area involved.

"In spite of the severe condition associated with the clinical picture,, the lesion keeps localized to the cornea, without complications from the deeper layers of the eye. Thus, when Feingold has reported a case of this lesion, associated with hypipyon, other authors have interpreted the occurrence of this phenomenon as a sign of secondary infection.

"According to Duke-Elder, 25 per cent of the cases are bilateral, even though the eyes need not necessarily be affected at the same time. Thus, in Wiedensheim's case the interval between the bilateral appearance of the lesion amounted to four years.

"In the course of years, various therapeutic measures have been tried, often rather radical, with internal medication as well as local surgery—but, on the whole, with rather unfavorable results, as the process keeps on progressing, albeit with periodical pauses; and generally the prognosis must be said to be poor."

Dr. H. Okkels of the University Institute for Pathological Anatomy is quoted as saying, "There is found an ingressive infiltration of vessels with concomitant perivascular cellular infiltrations circularly in relation to cornea. The vessels in question, mostly concentrically along the corneal periphery, present an outer diameter of about 30 microns and are fairly radially arranged, so that in the sections we may see them cut lengthwise to a considerable extent. The endothelium is normal, and the elements of the vascular wall itself show no signs of degenerative changes. Adventitiously, on the other hand, serial, ovoid, easily stainable elements are found, corresponding in shape and size to the adventitious cells which frequently occur in certain chronic productive inflammations. Centrally (in the direction towards vertex cornea) the said vessels are transformed into more sinuous stretches of capillary dimensions, but the concomitant cellular infiltrations constantly retain the character of adventitious, proliferous cells.

"Peripherally, in the voluminous infiltrations by the corneoscleral junction, lymphocytic elements as well as plasma cells and mast cells are found. There are also here vessels, which show signs of obliteration in different stages, rising to a completely structureless, detritus-like transformation. Further, in these infiltrations there are found groups of cells of a type similar to those described in connection with the adventitious cellular infiltrations. A few of these elements contain particels which

convey the impression of undergoing phagoctytosis; if this conception is correct, we should be justified in supposing the cellular types in question to be histiocytes.

"Among the various theories on the etiology of the affection, chiefly the neurotrophic one is based on pathologic-anatomical arguments. According to Junius, the simultaneous occurrence of necrosis vesication and edema are characteristic of trophoneurosis. The adherents of the theory point out that the violent pain which is characteristic of the disease, occurs in connection with hypotension (Ahlstrom, Dormalgen, Junius; and the fact pointed out by Heintz, that the thinning of cornea in ulcus rodens does not involve the formation of a staphyloma).

"The old vascular theory unconstrainedly explains the predilection of the disease for elderly individuals, its bilateralness, its peculiar impassivity to treatment that induces destruction, such as corrosion and cauterization. It is possible that several forms of ulcus rodens exist; both clinical and histologic evidence might seem to suggest this. The vascular genesis, however, can hardly be rejected, and no doubt ought to be still taken into consideration in each separate case."

The Treatment of Cancer of the Larynx with Comparison of Results Obtained by Surgery and Radiation Therapy. M. F. Arbuckle, M.D., St. Louis. Southern Medical Journal, October, 1939.

A short series of intrinsic and extrinsic cancers are presented. Cancer is second in cause of death in the United States; that of the larynx constitutes about 1.8 per cent. Various opinions of men throughout the world who have had extensive experience along this line make up a large part of the paper. Two tables are included showing the results obtained by the author. A long bibliography is appended. The author's own summary and conclusions are as follows:

1. Cancer occupies second place in the list of causes of death in the United States. Cancer of the larynx constitutes about 1.8 per cent of these.

2. The site of origin of cancer of the larynx most often is the true vocal cord.

3. The lymphatic supply to the true vocal cord is practically nil, therefore metastases do not occur while the tumor is still actually confined to the true cord. For the above reason surgical removal by laryngofissure, when the cancer is truly cordal, with lasting cure and without loss of function, is possible in over 80 per cent of cases.

4. The suffering and inconvenience to the patient after laryngofissure is comparatively little and the mortality rate is very low. Reported results of treatment of cordal cancer by radiation alone do not equal those obtained by surgical treatment.

5. In extrinsic cancer the results of treatment by radiation alone have, in the last ten years, shown tremendous improvement both in palliation and in cure. With further improvements in technic of administration, I feel that we may confidently expect still greater developments. It is my belief that this is the treatment of choice either alone or combined with surgical approach in this type of cancer.

6. Treatment must be selected to meet the particular requirements of each case.

7. The universal cry is for early diagnosis and treatment. The universal practice, almost, is late diagnosis and delayed treatment.

8. This situation will be corrected and the mortality rate from laryngeal cancer decreased if and when the medical profession as a whole becomes actively aware of these facts.

The symptoms, Signs and Treatment of Nasal Sinusitis in Children. S. E. Birdsall, London. The Journal of Laryngology and Otology, September, 1939.

Eighty cases occurring two consecutive years are reported. There were 36 boys and 44 girls, ranging in age from two to 13 years.

The symptoms in order of their frequency are as follows:

	Cases
1. Nasal obstruction	39
2. Cough	33
3. Frequent colds	32
4. Rhinorrhoea	21
5. Pain	14
6. Throat symptoms	12
7. Anorexia	8
8. Otorrhoea	7
9. Bronchitis (confirmed)	6
10. Listlessness	5
11. Post-nasal discharge	4
12. Asthma	4
13. Epistaxis	3

There is a detailed analysis of these symptoms as elicited from the history and examination.

Probably the common cold is the most common aetological factor, therefore it is suggested by the author that colds in children always be treated, preferably by nasal alkaline lotions or with ephederine to relieve the obstruction. In 13 cases a definite specific illness was found to have preceded the symptoms of sinusitis, seven of these being a sequalae of pertussis. Thirty-three of the children of this series had undergone tonsillectomy and adenoidectomy without benefit—in contradistinction to the theory that such operations will favorably influence the course of a sinus infection.

Anterior and posterior rhinoscopy, translumination and X-ray of the sinuses showed muco-pus present in the anterior portion in 42 cases, significant changes in the appearance of the nasal mucous membrane in 34 cases. There was an excessive pallor present in 12 cases, hyperemia in 10 cases, and atrophic change in 10 cases. Muco-pus, or mucus in excess, was present in the nasopharynx in 27 cases, of these nine had muco-pus which must have originated in the posterior sinuses. The anterior group of sinuses appear to be much more commonly involved in childhood.

Translumination in 11 cases showed opacity of the antra, in six cases unilateral, and in five cases bilateral. In unilateral sinusitis translumination is of distinct value but when there is present a bilateral infection it is of little value because there is always doubt as to the degree of transradiancy to be expected in children. Twelve cases showed enlarged or inflammed tonsils. In 10 cases after treatment of the sinusitis the condition of the tonsils improved. There was a dermatitis of the upper lip and anterior nares observed in five cases. This was not an eczematous condition so frequently associated with a watery rhinorrhoea. Two of the cases were pustular, in one a lesion resembling herpes and in one the lip was greatly swollen and everted with ulceration of the mucous membrane.

Thirty-seven cases were X-rayed. In 35 of the cases the pictures showed the antra as the predominantly affected sinuses. In 22 cases the opacity showed involvement of the ethmoid cells as well as the antra. Both antra were equally diseased in 24 cases, and one side predominantly in nine, but in only two cases was the infection strictly unilateral.

The cases reported are those in which simple conservative methods of treatment have failed. There is given a discussion regarding the rationale of the treatment of sinusitis in children, as to how the infection occurs and why and how it gets well. The nasal blockage the author takes care of by means of ½ per cent solution of ephederine in normal saline and removal of the secretions by

sniffing or syringing with some alkaline lotion. He has demonstrated to his own satisfaction that this solution of ephederine can be introduced into the sinuses of children, even when their linings are grossly swollen, by the Proetz displacement method.

The majority of this series of cases were so treated at weekly intervals. If the cases were advanced the treatments were given twice weekly. With this treatment 34 cases were completely relieved of their symptoms and signs of infection in the average time of one month. The results showed to be lasting over quite a period of time (months). If no improvement was noted with the replacement treatments, then antral lavage was carried out (in 16 cases). Improvement was immediately noted and the replacements effected the cure. The conservative treatment failing in nine cases then antrostomy was performed. The intranasal route was used in seven cases and the Caldwell-Luc in two cases.

The summary shows that about one-half of the cases responded well to the replacement treatments, and that the majority of the remainder responded to lavage plus replacement treatments.

Some Phases of Tuberculosis of the Larynx. Mervin C. Myerson, M.D., New York. Annals of Otology, Rhinology and Laryngology, September, 1939.

This is a valuable discussion of this troublesome subject, viewed from many different angles. It is about 40 pages in length and include many excellent drawings, microphotographs and tables. There is a lengthy bibliography. Practically all the different phases of the pathology, classification, methods of treatment, etc., are discussed in full. It does not lend itself well to abstracting. One of the opening statements: "Tuberculosis of the larynx is always secondary to disease of the lung."

According to the experience of the author the electrocautery is the best single weapon available to the laryngologist. With it the edema is reduced as well as searing the active and inactive ulcers. It should be applied with great precision and not used to destroy diseased tissue. His experience shows that it should be applied to from one to four places at a sitting with probably a week interval. Indirect laryngoscopy with 10 per cent cocain was used routinely. If the pain cannot be controlled by the electrocauterization then the superior laryngeal nerve should be injected with novocain followed by alcohol. In this manner the patient is able to keep up his nourishment where otherwise swallowing would be so painful that he would refuse to take nourishment. These injections give relief of varying periods of time, sometimes lasting only a few days. Although X-ray treatments are advocated by some the author thinks that acute and active cases will be made worse by X-ray therapy.

In conclusion the author says:

"An analysis of the 145 larynges which were healed reveals that 87 received no therapy except silence, which is routine for all cases. Nothing was used in these larynx, some of which healed, even though the patient died. This confirms the opinion I have long held, that the value of local therapy in tuberculosis of the larynx is greatly overestimated. The larynx will heal if the tissues can undergo fibrosis. If such fibrosis cannot occur, no therapeutic measure will be of value. In conclusion, it behooves the laryngologist to understand the significance of the pulmonary disease and its many phases when he is treating laryngeal tuberculosis. With this understanding he can more properly treat the larynx and evaluate the future course and outcome of the disease.

PLASTIC SURGERY

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Correction of Congenital Deformations of the Hand. Henry W. Meyerding, M.D., and Douglas D. Dickson, M.D., Rochester, Minn. American Journal of Surgery, April, 1939.

The authors have gone into the congenital deformities of the hand and have attempted to classify these deformities broadly and to give some method of correction of the various deformities. With such a wide subject and variety of congenital anomalies it is obvious that any method of repair or reconstruction is general and every case must be studied individually. The procedure carried out in each instance must give the best functional results as well as the best cosmetic appearance. It is pointed out by the authors and we should like to emphasize the point that function should never be sacrificed for cosmetic result. A practical or working classification of congenital malformations is difficult because of the multiplicity and variance and because so many will occur in various combinations.

The basic approach to the study of these congenital malformations is through etiology. Hypotheses too numerous to mention in a paper of this kind have been put forth. Similar congenital malformations of the hands and feet frequently are encountered in examining the same individual; this fact together with the high incidence of a history of similar malformations in forebears, suggests the possibility that the germ plasm hypothesis of origin of the condition is correct. The work of Bagg demonstrated that congenital deformities may be produced by insult to the germinal cells, that these deformities may manifest themselves in the progeny.

Syndactylia: Web Fingers

Syndactylia is a congenital anomaly perhaps most often met with in the hand and it may be present in all degrees. A great many operations have been described for its correction and in the very mild cases some of these procedures may be applicable. But a case of any severity especially for those cases in which the fingers are fused in their entire length, should be separated without flaps except that a triangular flap should be left on the dorsum of the hand to form the web. The remaining denuded area should be closed with a thick split graft as described by Blair and Brown.

Polydactylism: Supernumerary Digits

A great many supernumerary digits are seen. These may be marginal or central. Those on the thumb or little finger are seen most commonly. These may have any degree of fusion from many soft tissue attachments to the fusion of the phalanx. Polydactylism is frequently bi-lateral and frequently involves the feet. Before any surgical procedure is carried out a complete study of the relationship of the extra digits should be made and a plan of reconstruction made so that injury will not result to the normal digit. An extra digit to the thumb may be better left alone in some instances since an effort at removal frequently disturbs nerves, vessels and joints, so that the main digit may be made useless. In the simple polydactylism, simple amputation usually suffices. Bilhout-Cloquet plastic procedure has the advantage in caring for bifurcated distal phalanges, of preserving the attachment of the tendon.

Ectrodactylia: Cleft Hand, Lobster Claw Hand, Crab Claw Hand

The classical claw hand is one in which the middle finger is missing. This may or may not extend into the palms of the hand or involve the

third metacarpal. In either case the primary object in correction is to obliterate the cleft with removal of the rudimentary third metacarpal if necessary.

Clinodactyly, Dactylogryposis: Flexion of Fingers

This deformity may exist in any finger and in any degree. Those of milder degree seen early may be splinted and thus correct the effection. The more severe conditions seen later in life may be corrected by division of contracting bands, possibly lengthening of the tendon and closure of the defect with a split graft.

Megalodactylia, Macrodactyly: Giant Fingers

Hypertrophy of the digits, a rare entity, usually affects the thumb, index finger or middle finger. Giant fingers result from one of two causes: 1. Bony growth. 2. Lymphatic and neurofibromatous hyperplasia. If overgrowth is the result of neurofibromatous tissue, a plastic procedure, in the course of which the hyperplastic tissue is removed, can be carried out in an attempt to improve the appearance of the hand. When the gigantism is a result of bony overgrowth as well as of hypertrophy of the soft tissues, both function and appearance of the hand can be improved by amputation.

Vascular Lesions: Arteriovenous Fistula

Arteriovenous aneurysms and the various vascular nevi are frequently seen in the hand. Diagnosis is frequently aided by arteriography and may be surgically treated in some cases. The vascular nevi are treated here in accordance with the general principles of management.

Talipomanus: Club Hand

The normal axis of the hand usually parallels that of the forearm. Disturbance in the relationships of these axes results in the deformity denoted clubhand, either congenital or acquired. Congenital clubhand is commonly associated with defects of one of the two bones of the forearm. Bilateral clubhand is seen about as often as is the unilateral variety. Other congenital malformations frequently are associated with clubhand. Congenital absence of the radius frequently is associated with absent or rudimentary thumb and carpal bones on the radial side, atrophy of the forearm and an enlarged and curved ulna. Correction is carried out by physiotherapy and stabilization of the hand. Club hand with contracture is analagous to congenital club foot. In the treatment of contracted club hands, without bony defects, plastic procedures on the fascia and tendons usually are sufficient. These procedures are to be followed by adequate immobilization and proper physiotherapy.

Malformations With Extensive Maldevelopment

These may exist in any degree from an absence or malformation of the entire extremity to the smallest part of the extremity. These conditions must be corrected according to the individual case.

Malformations With Mild Development

Congenital contraction rings or so-called amniotic furrows are deformities of milder degree. These contraction bands consist of dense fibrous tissue and may encircle the extremity at any level. That portion of the extremity which is distal to the contraction ring may exhibit any degree of maldevelopment and may determine the advisibility of surgical removal of the contraction furrow.

Congenital Variation In The Carpal Bones

Supernumerary carpal bones are not uncommon. Numerous types have been described. These are not important except those cases which might be traumatic and comparison with the opposite wrist may aid in treatment.

Symphalangism: Congenital Fusion of the Interphalangeal Joints

This condition is extremely rare. It is a hereditary anomaly characterized by fusion of the interphalangeal joints. It is frequently associated with other congenital lesions. Genealogic investigations have demonstrated that this anomaly is inherited according to Mendel's law. Drinkwater has traced the condition back 14 generations. Should the function of the hand be seriously impaired the only applicable surgical procedure would be arthroplasty.

Miscellaneous

Under these congenital variations may be mentioned brachyphalangia and brachydactylia, hyperphalangism, arachnodactylia, which are described as abnormal shortness or abnormal length of metacarpals and phalanges. Another is multiple exostosis which is a hereditary condition characterized by more or less symmetrical bony or cartilaginous overgrowths occurring at the disphyseal extremities. The hands may be involved as well as other parts of the skeletal system. Because of the proximity of the abnormal tissue to the epiphysis, disturbances of growth frequently are encountered. The cortex of the diaphysis may have irregular instead of regular margins. Of the bones of the hands, both phalanges and metacarpals may be involved but the carpus and epiphysis escape.

Comment: It is observed from the foregoing article that the multiplicity of congenital lesions presents problems in treatment which require accurate knowledge concerning which of the bones and soft tissues are involved. One attempting to treat these anomalies must of necessity study each individual case thoroughly and draw up a plan of correction which will give the best function and cosmetic result remembering never to sacrifice function for cosmetic reasons. In only a few of these conditions can any definite rule for correction be laid down and each must be treated on its own merit.

ORTHOPAEDIC SURGERY

Edited by Earl D. McBride, M.D., F.A.C.S.
717 North Robinson Street, Oklahoma City

Oklahoma City, Oklahoma,
605 N.W. 10th St.,
October 19, 1939

Dr. L. S. Willour,
McAlester, Oklahoma.
Dear Dr. Willour:

Instead of sending in abstracts for the next issue of the Journal under the Orthopedic Section, I am submitting a resume of the recent meeting

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of the Clinical Orthopedic Society which met in Oklahoma City and Little Rock, Arkansas, on October 13 and 14. I hope this will be satisfactory:

* * * *

The orthopedic surgeons of Oklahoma City considered it a great honor to be hosts to the Clinical Orthopedic Society on October 13. This is an organization of national scope. There were approximately 100 orthopedic surgeons in attendance. Many distinguished surgeons from Chicago, Detroit, Rochester and other cities were here to take part in the meeting.

The program of the meeting was conducted entirely by local orthopedic surgeons. It is the policy of this Society to visit annually two different cities and review the work of the local orthopedic surgeons. The morning meeting was held at Crippled Children's Hospital and the afternoon meeting at the Municipal Auditorium. The following day the Oklahoma City Orthopedic men accompanied their guests to Little Rock for the second day of the meeting.

The morning session was called to order by Dr. Wallace Billington of Nashville and Dr. H. Earle Conwell of Birmingham. The resident orthopedic surgeons began the work.

Dr. Klein demonstrated fractures of the spine.

Dr. Swenson discussed luetic lesions of the long bones and presented a number of cases.

Dr. Sell demonstrated the treatment of congenital club feet by the Kite method of checking the deformity with X-ray until the astragalus is well reduced before forcing the foot up into dorsiflexion.

Dr. Bishop demonstrated vertebral lesions in undulant fever and severe gunshot wound of the foot.

Dr. VonSall presented cases of idiopathic scoliosis. He demonstrated post-operative results of fusion of the spine following forcible plaster correction.

Dr. Paul C. Colonna demonstrated post-operative cases of arthroplasty of the hip and presented a case in which he had used the Smith-Petersen Vitallium cup over the head of the femur.

Dr. Howard B. Shorbe presented cases showing results after shortening the femur of the well leg for equalization of leg length.

Dr. Chas. Rountree showed an unusual case of paralysis of both shoulders following poliomyelitis in which he had done a bilateral flexorplasty of the elbow with shoulder fusion.

Dr. R. L. Noell demonstrated the operative treatment of pronated feet, showing cases where the anterior tibial tendon was transferred in a position to correct the deformity.

Dr. John Burton explained his method of treatment the wide ulcerations over the tibia following osteomyelitis. He showed cases in which the skin had been shifted over this region by plastic methods.

Dr. Earl D. McBride presented a number of post-operative cases which had been treated by his original operation for bunion and hallux valgus deformity.

Dr. W. K. West and Dr. Colonna discussed benign and malignant bone tumors.

Dr. D. H. O'Donoghue demonstrated his method for medial osteotomy for correction of resistant club foot deformity.

The afternoon session also proved very profitable in the demonstration of many post-operative results.

Dr. Elias Margo presented cases of fracture of the upper end of the tibia treated by open surgery, and cases where the head and neck of the humerus were excised.

Dr. West demonstrated end-result of fractures lower end of radius and ulna; Dr. Shorbe discussed old unreduced dislocations of the elbow; Dr. McBride showed several cases of fracture-dislocation of the cervical spine, reduced by closed manipulation under anesthesia. Dr. Rountree demonstrated results in reconstruction of the lower extremity and equalization of leg length following multiple fractures. Dr. Noell closed the program with discussion of paralysis valgus deformity of the foot by tendon transplants.

After the guests were taken on an automobile trip through the oil fields and an oil well in the operation of drilling was demonstrated, a banquet was held at the Oklahoma City Golf and Country Club. The group then left by special train for Little Rock where Dr. F. Walter Carruthers of that city carried on the meeting in a very successful manner.

It was a pleasure to have so many distinguished orthopedic surgeons visit Oklahoma and express satisfaction in respect to the professional conduct of the practice of orthopedic surgery.

Yours very truly,
EARL D. McBRIDE, M.D.

INTERNAL MEDICINE

Edited by Hugh Jeter, M.D., 1200 North Walker, Oklahoma City

The Vitamins: A Symposium Arranged Under the Auspices of the Council on Pharmacy and Chemistry and the Council on Foods of the American Medical Association. (Published by the American Medical Association, 1939).

This is undoubtedly one of the most important, if not the most important recent contribution to medicine and particularly to those of us who practice internal medicine. It is a 637 page book covering all phases of the work which has been done on vitamins, setting forth the reliable claims for vitamins and their views in various diseases for which they have been used; going thoroughly into the chemistry of vitamins; the physiology and pathology concerned in the diseases which are considered to be vitamin deficiency types; all of the important reports by various investigators are given including reports on all of the vitamins; knowledge concerning the effect of vitamin deficiency and also vitamin therapy in various types of animals; laboratory tests for vitamin deficiency; assays; sources; human requirements and many

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other interesting and extremely important problems are thoroughly reviewed.

The work of the most important contributors is given.

An abstract of the contents is, of course, impossible. The following paragraph, however, is a summary of one of the chapters, the one pertaining to the granulocyte and vitamin A.

"It may be concluded that no very striking effect of vitamin A on the cellular elements of the blood has been discovered."

Such pertinent facts as this are set forth throughout the book.

Many of the common vitamin deficiency diseases are also analyzed in a very satisfactory manner. For example, the Pathology of Beriberi and Vitamins in Relation to the Prevention and Treatment of Pellagra.

It may be said that this book is not only thoroughly scientific, but also equally practical and, as I see it, meets a much needed demand at this time.

UROLOGY

Edited by D. W. Branham, M.D.
514 Medical Arts Building, Oklahoma City

Carbuncle of the Kidney. George A. Ingrish. Journal of Urology, September, 1939.

Carbuncle of the kidney is sufficiently common and the treatment so definite, that unless it is recognized and properly handled an untoward mortality can result.

A summary of the article is as follows:

Eleven cases of metastatic staphylococcus infection of the kidney, proven by operation, have been reported. From review of these cases, I find several certain facts regarding the etiology, symptoms, diagnosis and management which I consider worthy of special emphasis.

The primary focus in each of the 11 cases was a cutaneous supurative lesion of no certain location. The organism isolated from the involved kidney was a staphylococcus aureus.

A rather diagnostic physical sign demonstrated by Dr. Frank M. Phifer, which has not been emphasized by other writers, is stony hard costovertebral rigidity on the affected side. This is due to a tremendous perinephric reaction and marked thickening of the fatty capsule which becomes leathery in character. Fullness over the renal angle is characteristically absent except in cases associated perinephric abscess.

The urine in the majority of the cases was characteristically normal except for a slight trace of albumin which was undoubtedly on the basis of toxic nephritis.

Intravenous urography in conjunction with the careful interpretation of a flat X-ray film, when localizing symptoms are present, and a history of a recent cutaneous lesion, will usually suffice to make a diagnosis. Cystoscopy is seldom indicated.

Inasmuch as the pyelographic findings in two of the 11 reported cases could not be differentiated from that of a neoplasm, it is important to include carbuncle in the differential diagnosis in which a diagnosis of tumor of the kidney is made when the patient is showing evidence of sepsis.

Lesions of the anterior surface of the kidney are associated with abdominal symptoms which at times lead to an erroneous diagnosis of intra-abdominal diseases.

Considerable confusion and differences of opinion exist in the literature as to treatment. Inasmuch as conservative treatment with incision and drainage failed to effect a cure in two of these cases, it is felt that the toxic patient, especially if more than one lesion on the kidney is present, should be subjected to nephrectomy rather than to some form of conservative surgery.

The postoperative management of these patients is important inasmuch as they show evidence of myocardial damage due to the prolonged, severe sepsis and for that reason they should be kept at bed rest until the pulse approaches normal. Also, general measures to increase the resistance of the patient should be carried out.

Elusive Ulcer of the Bladder. A Report of 138 Cases. Herman L. Kretschmer, Urologist to Presbyterian Hospital. Journal of Urology, September, 1939.

A comprehensive survey of this most distressing bladder disease, almost totally confined to the female sex. Dr. Kretschmer particularly emphasizes the importance of recognization of the disease because from his series, many have gone undiagnosed for years.

Patients who present the history of painful and frequent urination without the presence of pus in the urine should be suspected of having elusive ulcer of the bladder.

He has found from the wide variety of treatments suggested that a combination of water dilation of the bladder in conjunction with simple fulguration of the ulcer area the most promising of theraputic benefit. He mentioned that perforation or rupture of the bladder wall is an accident that may happen from such treatment and warns that care should be taken in such procedures.

Summary and conclusion:

The ideal method of treatment is not yet at hand.

The most widely used measure and probably the most satisfactory is fulguration, either alone or with water dilatation.

The number of cures is still relatively low (20.37 per cent).

The number of greatly improved cases is more encouraging than one is apt to think (36.11 per cent).

The longer the duration of symptoms the less favorable the outlook.

Contrary to the prevailing opinion, the possibility of malignancy is one to be reckoned with. (One case in a series of 138 cases.)

New Books

SURGERY OF THE EYE: By Meyer Wiener, M.D., Professor of Clinical Ophthalmology, Washington University School of Medicine, St. Louis, Missouri; and Bennett Y. Alvis, M.D., Assistant Professor of Clinical Ophthalmology, Washington University School of Medicine, St. Louis, Mo. 445 pages with 396 illustrations. Philadelphia and London: W. B. Saunders Company, 1939. Cloth, $8.50 net.

It is the intention in bringing out this book to supply a handy atlas that the practicing ophthalmologist and student of ophthalmology can quickly refer to for information on the surgical correction of ocular defects and disease.

In this work not only is found the descriptive material but serial drawings illustrating the technic. These drawings which have been in many instances amplified by the addition of schematic inserts make all steps in the operative procedure very clear and will supply the ready reference for which the book is intended.